Wm Hammond Hall.

FIRST

BIENNIAL REPORT

OF THE

SAN FRANCISCO

PARK COMMISSIONERS,

1870-71.

December 30-71

SAN FRANCISCO:
FRANCIS & VALENTINE, STEAM BOOK AND JOB PRINTERS,
No. 517 Clay Street and 510 to 516 Commercial Street.
1872.

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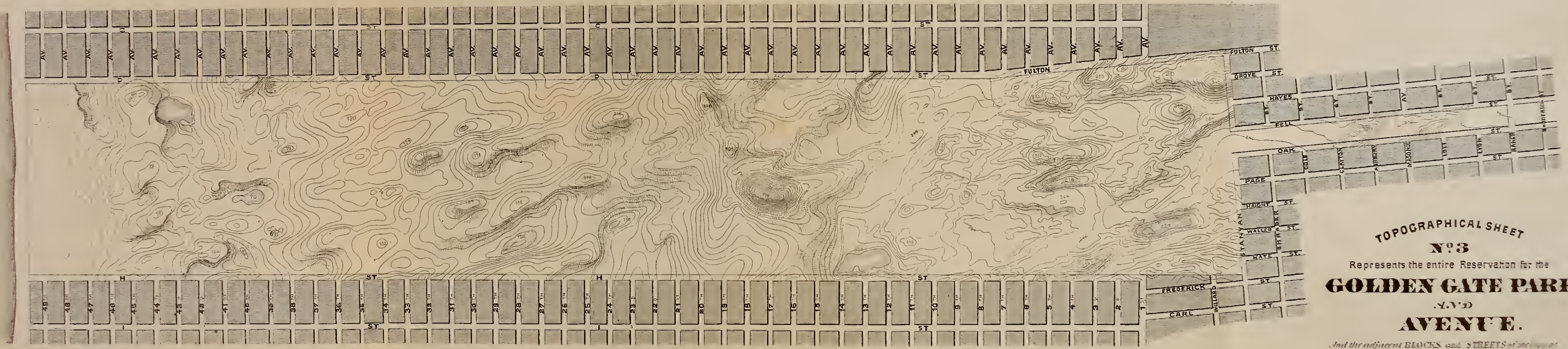
Sa523

GOLDEN GATE PARK.



TOPOGRAPHICAL SHEET

Nº 3

Represents the entire Reservation for the

GOLDEN GATE PARK

AND

AVENUE.

And the adjacent BLOCKS *and* STREETS *of the City of*

SAN FRANCISCO.

Surveyed and drawn under the direction of the

BOARD OF PARK COMMISSIONERS

BY Wm HAMMOND HALL

Note. The numbers indicate the hights of the curves to which they are attached above the Datum Plane.

SCALE 1200 FEET IN 1 INCH.

LITH. BRITTON & REY SAN FRANCISCO.

Wm. Ham. Hall,

First Biennial Report
to the Senate & Assembly -

Commissioners' Report.

Dec 30th 1871

To the Honorable
the Senate and Assembly
of the State of California:

Gentlemen:—The undersigned "Park Commissioners," under and by virtue of the authority of an Act of the Legislature of the State of California, entitled "An Act to provide for the improvement of Public Parks in the City of San Francisco," approved April 4th, 1870, have the honor to submit herewith a report of their proceedings, and a statement of their receipts and expenditures, as required by Section 6 of said Act.

The Commissioners organized on the 3d of May, 1870, by the election of S. F. Butterworth as President, and Andrew J. Moulder as Secretary.

On the 6th of May, the Commissioners advertised, in accordance with law, for bids for Park Bonds to the amount of one hundred thousand dollars, bearing interest at the rate of six (6) per cent. per annum, with a notification that under the law, no bid under par could be accepted.

The advertisement was continued for sixty (60) days, and at the expiration of that time, to wit, on the 5th of July, 1870, the only bid received was opened, and bonds to the amount of fifteen thousand dollars, were awarded to A. Seligman—the bidder—at par.

On the 1st of August, 1870, fifteen bonds of $1,000 each, dated August 1st, 1870, and bearing interest at the rate of six (6) per cent. per annum, payable semi-annually, the principal payable in fifty (50) years from date, were issued to said A. Seligman, and in return therefor, the sum of $15,000 in gold coin was received by the Commissioners.

Abraham Seligman was appointed treasurer, and his offer of one (1) per cent. per annum on monthly balances in his hands, was accepted.

On the 12th of May, 1871, Messrs. J. Seligman & Co., made a further bid for Park bonds to the amount of sixty thousand (60,000) dollars at par, which bid was accepted.

The bonds of this issue were dated as before, August 1st, 1870, although not delivered until July 1st, 1871.

The coupons for interest accrued prior to the date of their delivery, to wit: Coupon No. 1, payable January 1st, 1871, and Coupon No. 2, payable July 1st, 1871, were detached and canceled, and in this condition, surrendered to the City and County Treasurer.

The limitation imposed by the act creating the Board, that the Park bonds shall not be sold for less than par, has prevented the sale of the full amount of bonds (225,000) authorized by that act.

Other 6 per cent. bonds of the city of San Francisco have been negotiated by the city authorities at 92, and in view of this, it is not to be expected that capitalists will, at present, take Park bonds at par, for an investment.

But for the fact that the bidders expected to reap an indirect benefit in the improvement of the Park, and the consequent appreciation in the value of their property adjoining, not a dollar of these bonds could have been negotiated on the terms imposed. And the Commissioners feel assured that, as the same causes no longer stimulate bidders, no more of these bonds are likely to be negotiated within any reasonable time, unless the restriction, preventing the acceptance of bids below par, is removed.

With the sum, $75,000, already received, a large amount of work will be done, and the Avenue and Park can be thrown open to the use of the public, but it must necessarily be in a rude and unfinished condition.

Could the whole $225,000 authorized by the Act be realized, it is believed the Park could be converted into a most attractive and popular resort, answering, with comparatively moderate annual expenditures, the most pressing needs of the community.

Specifications for a minute topographical survey of the "Avenue" and "Golden Gate Park" and their connections with the adjacent city surveys, were prepared, and a number of competent Engineers and Surveyors were invited to put in sealed bids, stating for what sum in gross they would execute the work in accordance with said specifications.

On the 8th of August, 1870, the Bids were opened, and the contract was awarded to Mr. William Hammond Hall, the lowest bidder, for the sum of $4,860.

Mr. Hall entered the field shortly afterwards, with a corps of assistants, and completed a very elaborate and accurate topographical survey, early in December.

On the 15th of February, 1871, Mr. Hall presented his final report of this survey, with accompanying maps on a large scale, and in minute detail.

The report was accepted and the maps were officially adopted by the Board. Together, they contain all the information desirable as a basis for laying out and ornamenting the Park and Avenue. By their aid, a comprehensive plan for the improvement of the Park will be prepared. If need be, copies may be sent to the most distinguished Landscape Artists and Engineers abroad, and thus at small expense, may be obtained the results of their large experience and cultivated taste, of which our Engineer may avail himself in perfecting a grand plan for the improvement of the Park.

On the 17th of November, 1870, the Commissioners appointed a "Keeper of the Grounds of the Avenue and Park" at a salary of $75 per month. This appointment was necessary to protect the trees and shrubbery from waste by trespassers, and to prevent unauthorized parties from intruding upon the premises.

The Park keeper was further charged with the care of the nursery and green house, which were established, at a small expense, for the rearing of suitable evergreen and other trees and shrubs to be set out on the Park grounds. By this means, many thousands of young trees of the best varieties have been raised from the seed, and are now growing finely, and it is expected that this nursery will supply all the ornamental and shade trees necessary to stock the Park, at a trifling cost.

On the 2d of May, 1871, the Commissioners advertised for bids for grading "the Avenue," extending from Baker to Stanyan streets, in accordance with carefully prepared specifications. Twenty-three (23) bids were received and were opened at three o'clock P. M. on Friday, the 12th day of May.

The contract was awarded to B. Kenny, the lowest bidder, at the rate of four and one-half (4½) cents per cubic yard for cutting, and six (6) cents per cubic yard for filling or embankment.

A bond and other proper securities, for the faithful fulfillment of this contract, were exacted by the Commissioners.

Immediately after the award, the contractor commenced the work of grading the Avenue, and he has diligently prosecuted it since.

Up to this time, the grading has been completed from Stanyan street to Lyon street. The amount of work done under the contract is: 101,500 cubic yards of cutting, and 101,500 cubic yards of filling, at a total cost of $10,657 50.

On the 14th of August, 1871, the Commissioners elected William Hammond Hall, Engineer of the Park at a salary of $250 per month. Mr. Hall had been diligently engaged in the discharge of his duties, and all the work done has been under his superintendence, to the entire satisfaction of the Commissioners.

After due advertisement, proposals for macadamizing, in conformity with minute specifications, the Avenue roadway from Baker to Stanyan street, were opened by the Commissioners on the 20th of September, 1871. Three bids were received, and the contract was awarded to B. Kenny, the lowest bidder, at the rate of four and three quarters (4¾) cents per square foot. This work has progressed rapidly. Up to this time, one-half of the road bed has been sub-graded and dressed, and about 125,000 square feet macadamized.

On the 10th of October, 1861, bids were opened in response to advertisement, for the construction of a substantial redwood sewer in the "Avenue," leading to the Park. Three bids were received, and the contract was awarded to James Gaffney, the lowest bidder, at the rate of two dollars and ninety-seven cents ($2 97) per lineal foot. This work has been completed in a satisfactory manner, at a total cost of $2,206 71. Without it, the Avenue would have been seriously damaged by the heavy floods of the past month.

Under the instructions of the Commissioners, the engineer has laid out an extensive system of drives throughout the eastern portion of the Park, skillfully arranged to take advantage of the natural features of the country. Under his superintendence, eleven thousand seven hundred feet of roadway, now forty feet in width, have been graded in the Park, and a large amount of filling has been done towards grading the valley intended for the Lawn.

On the 8th of December, 1871, the Commissioners instructed the engineer to open a quarry of rock upon the Park grounds, and to surface or macadamize the roads already constructed. This work is being prosecuted with vigor, and in a few months many miles of attractive drives will be thrown open to the public.

In addition, considerable progress has been made in inclosing the Avenue with a neat but economical fence.

A number of blocks in the Avenue have been prepared for planting, and the Commissioners hope to avail themselves of the present favorable season to set out a large number of valuable and ornamental trees.

The Golden Gate Park contains about 1,000 acres, of which 270 acres at the eastern end, is good arable land, covered in many places with trees and shrubbery; this portion may at once be converted into an attractive resort. The remaining 730 acres, stretching down to the ocean beach, is a waste of drifting sand. Forbidding, as it appears at present, it is confidently believed that it can be reclaimed by proper appliances. Should the necessary means be placed at the disposal of the Commissioners, they will undertake the experiment of reclamation, and if successful, will continue the work until the barren sand-hills are converted into verdant fields. The Commissioners appeal to the financial statement hereto appended, in proof of the rigid economy exercised in all their expenditures.

They have devoted their best energies to the discharge of the responsible duties entrusted to them, and they feel justified in asserting, that rarely has so large an amount of valuable work been done, at so small a cost to the public.

In conclusion, they would invite special attention to the able and exhaustive report of the engineer, appended hereto.

It gives, in minute detail, all necessary information regarding the Avenue and Park, and the progress of the improvements made, with many valuable suggestions, which the Commissioners hope to realize. All of which is respectfully submitted.

S. F. BUTTERWORTH,
D. W. CONNELY,
C. F. MACDERMOTT,
Park Commissioners.

APPENDIX A.

PARK COMMISSIONERS' RECEIPTS AND DISBURSEMENTS FROM AUG. 1st, 1870, TO JAN. 8th, 1872.

RECEIPTS;

FROM PARK BONDS,

Product of Sale of 75 Bonds of $1,000 each, at par,	$ 75,000.00

FROM INTEREST,

Interest at the rate of 1 per cent. per annum on the daily balances in the bank from August 1st, 1870, to January 1st, 1872	338.93
	$75,338.93
Balance on hand, January 8th, 1872	$33,225.57

DISBURSEMENTS:

For Park Improvements	$28,638.62
Surveying, Engineering and Superintendence	7,068.00
Salaries	2,920.50
Nursery	2,319.19
Office Rent	500.00
Stationery and Printing	348.25
Advertising	186.75
General Expenses	55.75
Office Expenses	46.30
Balance cash on hand, January 8th, 1872	33,225.57
	$75,338,93

San Francisco, January 8th, 1872.

APPENDIX B.

Engineer's Report.

To Messrs. S. F. Butterworth, D. W. Connely, C. F. MacDermott, the Honorable Board of Park Commissioners, San Francisco.

Gentlemen:—Your Engineer has the honor to submit to you the following report of the progress of the work of improving the Golden Gate Park and Avenue, during the two years ending at this date.

Topographic Survey

Rightly considering that the basis of all improvement of the grounds under your control must rest upon a comprehensive and minute knowledge of the locality to be dealt with, you took steps, as an initiatory measure, toward having a thorough topographical survey made of the entire Reservation.

Accordingly, on the 8th day of August, 1870, your instructions to make such survey were issued, and proceedings were immediately taken to carry them into effect; the results to be attained by this examination were the subject of a previous understanding, being recited in certain specifications substantially as follows:

The boundaries of the Reservation were to be marked on the ground, as they had been previously defined and established by authority of law.

Contour lines of the ground's surface, corresponding to every four feet in height, above the city datum plane, were to be surveyed over the Avenue Reservation and so much of the main Park as was then suitable for cultivation; eight foot contours being taken over the remaining area.

The nature of the soil at all points; the growth of trees and shrubbery; the position and character of rock croppings and deposits; the locality and course of springs, ponds, lakes and streams—in short, every feature of the ground, whether natural or artificial, at all, material or important to the object and purposes in view, was to be made note of from accurate survey.

The most important points were to be marked by granite monuments, 27 in number; secondary points, by substantial posts, 150 in number; while many thousand small stakes were to be driven.

The dimensions of the monuments and posts were fixed, and the manner of placing them, defined; and there were also many other provisions, designed to secure the execution of the work in a complete and substantial manner.

A detailed description of the maps to be made from this survey was entered into, and other specific instructions given.

As before stated, the field work was immediately commenced, and pressed forward to completion in November, 1870.

On the 10th day of February, 1871, the maps were finished, and you approved and accepted them with the work in the field.

Original Maps

These maps, now in this office, are as follows :

One general topographical map of the entire Park and Avenue Reservation ; scale, one inch to three hundred feet ; showing curves of contour of the ground eight feet vertically apart ; distinguishing the character of the soil at different points, and to this extent a geological map, also.

One large topographical map of the eastern end of the Park Reserve ; scale, one inch to fifty feet ; comprising the arable lands of the main Park ; giving curves of contour corresponding to every four feet of elevation (in some cases every two feet), and heights of extremes of all undulations to the nearest foot ; the growth of trees and shrubbery in detail, together with many other features, considered worthy of note.

One large topographical map of the Avenue Reserve ; scale, one inch to fifty feet ; characteristics, same as last.

Physical Study

A thorough study of the physical character of the ground in detail, must necessarily precede the work of improvement, and to enable the reader of this report to judge of the merits or defects of the plan of operations hereinafter spoken of, he should possess a general knowledge of these details. With the view of illustrating, more clearly than can be done by words of description, the leading features, as well as much of the detail of the field, I herewith present a reduced copy of the general topographical map, from which will be seen, that the general outline of the Golden Gate Park Reservation is (approximately) a parallelogram, half a mile in breadth ; extending from the ocean beach, on the west, east-

The Park Area

erly, between D and H streets of the Outside Land survey, toward the improved portion of the city, about three miles, to Stanyan street, on the crest of the water shed of the peninsula of San Francisco—which crest here is in a valley, three-fourths of a mile wide, between the San Miguel Hills on the south, and the Lone Mountain Peak and ridge to the north—having in its general surface risen, in this distance, from the level of the ocean beach to a height of 240 feet; and that thence, easterly, but on a gentle descending slope, from nearly the prolongation of the centre line of the main Reservation,

THE AVENUE RESERVE

a parallelogram 275 feet in width, extends, between Oak and Fell streets, about 4,000 feet, to Baker street, at the very verge of the city's graded thoroughfares; its eastern extremity being less than one mile from the site of the City Hall now in process of construction.

TOPOGRAPHY.

The surface of the Reservation is much broken by ridges and peaks, which rise (in general very abruptly) above the average surface from 20 to 200 feet. Commencing at the sea beach, the ground ascends toward the east, very gradually at first, when at a distance inland of about one-third of a mile, having reached an average elevation of 80 feet, it falls quite abruptly 15 or 20 feet, forming a valley, somewhat varied in itself by slight undulations of surface, containing a chain of small perennial lakes or ponds. The eastern slope of this valley is again gradual, until at a distance of about one mile from the beach, where the points of two parallel ridges, from the east, make the slope more abrupt, while the depressions to the north, between, and to the south of these, lead on eastward, still with a gradual rate of ascent. In each of these easterly and westerly valleys are several lakes or ponds, most of which are also perennial in their character. The ridges rise, somewhat abruptly about 60 feet, and then lead on easterly, with a gradual ascent, until at a distance of one mile and three-fourths from the beach, a great ridge, of minimum elevation of 260 feet, cuts the Reservation, somewhat diagonally, from southeast to northwest. This ridge so distinctly separates the portions of the Reservation lying on either side of it—thus making any plan for one almost wholly independent of that for the other—that they might be properly known as the East and the West Park, respectively, and I may be pardoned for hereinafter alluding to them as such. This great traverse ridge has three prominent tops: the one generally known as "Strawberry Hill," a great dome-shaped mass covered with small oak and other low, bushy shrubs, having a maximum elevation of 414 feet, is nearest to the southern boundary of the Reserve. The two other tops, being northwest of the high one, are of peak-like character, of elevation 305 and 306 feet, respectively. This bold ridge terminates, just beyond the northern boundary of the Reserve, in a very steep bluff—almost a precipice. From the eastern slope of the main hill (Strawberry), a low ridge extends away to the eastward, toward the northern boundary, while the eastern slope of the traverse ridge, both to the north and south of it, is more abrupt; that on the north being modified by a slight ridge, having a deep valley between it and that from the main hill; that on the south, falling to an elevation of 200 feet, terminates at the border of a lake, the largest in the Reserve, capable of being made without excavation, and at trifling expense, to cover an area of ten to fifteen acres. As far eastward as Eleventh avenue, on the south side, and Seventh avenue, on the north, the ground is of a general height of 240 feet above the datum plane, slightly undulating and varied by occasional knolls, 20 to 35 feet high. We find thence, a point of ridge commencing on the north; another broad flat ridge, near the middle of the Reserve, with a narrow valley between the two, and a wide valley, of general elevation of 222 feet, to the south, extending to some rising ground near the boundary on that side. Still eastward, the northern ridge rises gradually, being covered (particularly on the northern slope) by a dense growth of Scrubby Oak, 10 to 15 feet in height, to a point about 400 feet east of the line of First avenue, where it ascends more rapidly forming a peak in the north-eastern corner of the Reservation, 344 feet in height, overlooking the entire East Park and Avenue, and all the country toward the entrance to the harbor, and the western part of the city. The northern valley becomes broader toward the east, being 600 feet wide at the line of Second avenue, 900 feet at the line of First avenue, and thence gradually terminates at a cone shaped hill 280 feet in elevation, which is covered with a fine growth of

Oak and Ceanothus—one of the prettiest features of the Reservation. The middle ridge divides at the crossing of Fifth avenue, where between its prongs, is a little lake 210 feet above datum, 450 feet long by 80 feet wide. The spur of hill on the north side of this lake is narrow and bold, being covered by a dense growth of Oak bushes. It terminates in a well wooded point near the line of Second avenue. The spur on the south is more of a broad plateau, very steep on the northern side, toward the lake, sloping away gradually to the south, where, by a little rising ground, it joins the point of hill which lies near the southern boundary, thus forming the eastern limit of the southern valley. East of this rising ground is another valley, bounded on the north by a well wooded ridge, which extends to the eastern boundary of the Reservations, being a continuation of the southern spur of the middle ridge. At the southern edge of this valley is a pond or lake basin, 600 feet in length, 180 feet in breadth; south of which, a low, sharp ridge, the continuation of the south ridge, eastward, and then, a general falling off in the surface, to the southern boundary.

THE SOIL.

West of a line drawn from Fourteenth avenue on the southern to Eighth avenue on the northern boundary of the Reserve, the surface soil is almost pure sand, which, with the exception of certain spots of a limited area, around the ponds spoken of, is of a loose, drifting nature. The great traverse ridge is an upheaved mass of metamorphic rock of a serpentinoid character—the red rock, so much used upon road beds in this vicinity. It is entirely covered by the sand drift at the southern end, and on its western and eastern slopes, but the formation shows quite plainly about the summits of the two northern peaks and along the sides of the greater hill to the south, which latter is covered, toward the top, by a stiff soil, slightly sanded—the natural disintegration of the bed rock.

East of the line above defined, the top soil is a dark sandy loam, the result of the mingling, for ages past, of decayed vegetable matter with the drift sand When dry, it is quite loose and sandy in its appearance ; when moist, presenting a much more promising aspect, that of containing a great proportion of rich vegetable matter. In localities which have been, or are covered by a growth of Oak bushes, a deposit of 6 to 10 inches of leaf mould is found over this loam. In certain other places, as on the northern spur of the middle ridge and the western slope of the northeast hill, as well as in the cone shaped hill at the eastern end of the northern valley, the soil is changed somewhat in character by the intermixture of the disintegrated serpentinoid, which rock here forms the substratum ; while in the eastern portion of the main valley, at the junction of the Avenue with the Park, and for several blocks of the Avenue itself, the soil is again varied, and becomes more compact and stiff, from its close contact and mingling with a bed of yellow clay, immediately underlying it in this locality.

The substratum of a great portion of this area of arable land, is of a still more sandy nature than its surface soil, and, of course, liable to drift if exposed to heavy winds—the rock formation and the clay bed in the localities indicated, being the only exceptions. This rock, as found in the northeast hill, is much broken in its stratification, greatly decomposed, chiefly of a blue or a yellowish color, and is not well suited, as far as examined, for the surface of a road ballasting. Greater developments in the deposit, however, may bring to light a better material. In the middle hill as well as in the cone shaped hill, its character has been less altered by atmospheric action, is of a red or grey color and well suited to the use in question. This material in the great traverse ridge is of the very best quality.

THE GROWTH OF TREES AND SHRUBBERY.

The sandy region is almost entirely barren. In the western valley, by the ponds, a growth of several hundred willows, and about an equal number of lupin bushes (*Lupinus albifrons*), a few scattered specimens of the *Aplopappus laricifolius* (a low fastigiate branched shrub), with the grasses, flags, tules and the cresses, in and about the water and its margins, cause this section to present a gratifying contrast to the residue of this region, which with the exception of several spots, similarly but less extensively blessed, is without vegetation of any kind. The top of Strawberry Hill is thickly covered by a very low growth of Scrub Oak (*Quercus acutidens*), and the California Cherry (*Cerasus ilicifolia*), with a few specimens of the Red Berried Elder (*Sambucus pubens*), and the *Artemisia pachystachya*.

The fact that wild strawberries are found in abundance upon the sides of this hill, has, no doubt, given it its name. Of the arable portion of the Reserve, the northern slopes and tops of the principal ridges and hills are, as a general thing, covered with a dense growth of scrubby Live Oak (*Quercus agrifolia*) and California Lilac (*Ceanothus thysiflorus*), of a maximum height of 15 or 18 feet, interspersed by a few Red Berried Elders of nearly equal height, and here and there a stunted specimen of the California Cherry hereinbefore mentioned. The southern exposures are much more open, and are dotted by clumps or single bushes of these growths; the intervening spaces, and the valleys, being thickly overspread by the Silver Leaf Lupin (*Lupinus albifrons*) the *Artimisia pachystachya*, a few specimens of the Yellow Lupin (*Lupinus macrocarpus*), the wild Gooseberry, and other less notable plants and grasses.

DRAINAGE.

The natural drainage of the Park and Avenue Reservation is excellent. The eastern boundary of the main Reserve being on the crest of the water shed, its drainage slope is to the west, into the ocean, while that of the Avenue is toward the east, through the city sewers, into the bay. The general fall in each direction is such that an effectual system of drainways may be readily constructed at an expense much less than that generally accompanying this feature of park improvement. As has been described, the character of the soil is such that there are no marsh lands or stagnant pools to be drained before the grounds can be made pleasurable to the public. There is however, an abundance of water to be had throughout the eastern portion of the Reservation, at a depth of 25 to 35 feet below the surface of the ground in the valleys. Under the clay formation, at the western end of the Avenue, it is even nearer the surface.

In short, the Park Reservation contains about 1,000 acres; of which the western-most 730 are of drifting sand to a depth of 5 to 50 feet, with the exception of the high rock ridge, the valley near the beach, and those limited tracts adjacent to the little lakes (seven or eight in number); while the remaining area is, for the most part, of an arable sandy soil, which has proven itself, when mixed with a small proportion of stronger earth and manure, to be suitable to the successful cultivation of those trees and shrubs, both deciduous and evergreen, to be desired in a well planted Park in the climate of San Francisco. And these 270 acres, together with the Avenue, admit of about 4½ miles of broad carriage drive, nearly a mile of less width; 2 miles of more secluded way, especially for equestrians, 7 miles of broad open walks, and half as much, in addition, of a narrower, more retired character, or ramble; and they present three natural sites for improvement as lakes, besides many others for the formation of ornamental sheets of water of smaller dimensions; leaving an abundance of disposable land for a dressed ground, or lawn, of 30 acres; a flower garden, with conservatory and ornamental grounds adjacent thereto, of 15 acres; a base ball or cricket ground of 20 acres; a botanical garden of 12 acres; together with grounds of an open, park-like character; spaces allotted to croquet and kindred games, others as children's play grounds; several thickly wooded tracts for rambling walks and something of picturesque effect. In addition to the above recited capabilities of the tract in question, it affords a favorable site for an elevated carriage concourse, overlooking the entire eastern half of the Reserve, and presenting other fine views without; with sufficient water at command of windmills and other pumping machinery, to answer all purposes, until such time as the city shall have provided some more permanent supply for her public works.

It is then this tract of arable land, the eastern portion of the Park Reservation, 270 acres in area, together with the avenue of approach from the city, which is now to be improved.

The Avenue, the nearest portion of the grounds to the city, in itself large enough for a pleasure ground of importance, yet not wide enough to admit of any considerable undulations of ground being retained to vary the landscape, was to be first dealt with. Accordingly upon an examination of the official grades of the adjacent city streets, it was found that the filling necessary to bring its surface, in many places, up to the grade, was in the aggregate nearly twice as much as the cutting to be done in reducing to the same plane, such other places as were above. On this account and for the reason that there was a transverse slope, of from 3 to 8 feet, from the grade height of Oak street on the south, to that of Fell on the north, which it was deemed advisable to do away with as much as possible, and because it was apparent that there was not the material in excess near at hand to make up the deficiency spoken of, it was determined to ask for a change of grades at certain points.

With the consent and approval of the City Surveyor, and the owners of adjoining property, these difficulties were partially remedied by a resolution of the Board of Supervisors, changing the grades on Oak and Fell streets (Res. No. 1968, dated March 27, 1871), and in conformity with these newly established levels, instructions were given to make a second estimate of earth work.

It was now determined by your Honorable Body to bring the surface of this Avenue to a plane or planes nearly corresponding to these new grades. To this end bids were solicited to do the said work by the cubic yard, subject to the measurement of your engineer, and the contract was, early in August, 1871, awarded to B. Kenny. To facilitate and check future calculations of work, a renewed cross sectioning of the ground, to be graded, was now made, and on the 8th day of May, 1871, the contractor commenced work on the eastern hill in the Avenue.

PLAN FOR THE AVENUE.

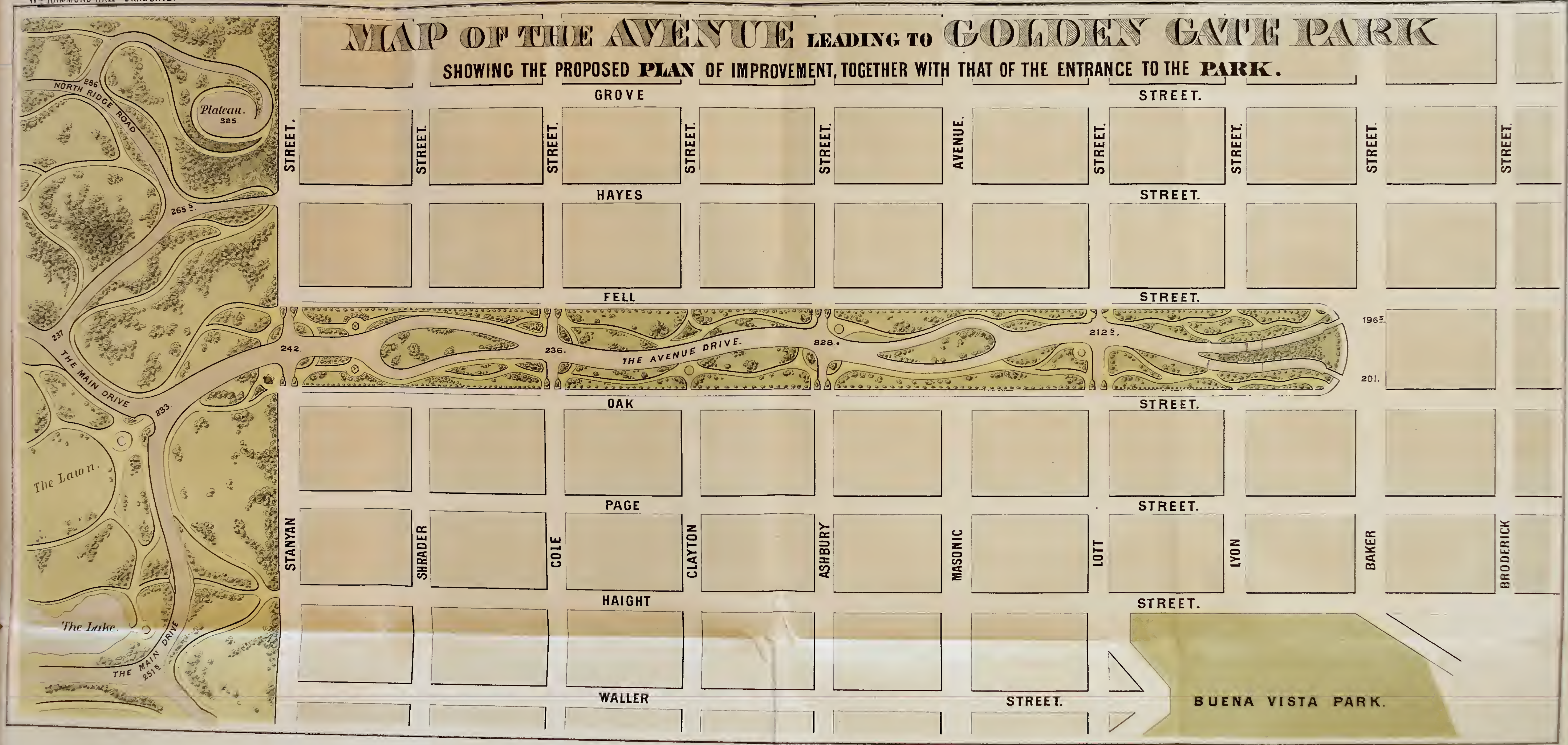
It became now important to decide upon a plan for laying out this Avenue, and differences of opinion existed upon the subject. A straight driveway of considerable breadth, with walks flanking it, was suggested, as were also various other nearly similar

Wm HAMMOND HALL DRAUGHTS.

SCALE 300 FEET IN 1 INCH.

MAP OF THE AVENUE LEADING TO GOLDEN GATE PARK

SHOWING THE PROPOSED **PLAN** OF IMPROVEMENT, TOGETHER WITH THAT OF THE ENTRANCE TO THE **PARK**.



LITH. BRITTON & REY, S.F.

plans, all providing for a rectilinear drive or drives. A plan embodying a curving, diversified roadway of less breadth, with winding walks, and something of a pleasure ground on each side, was presented, which latter method of improvement was finally adopted; and for the reasons following, that is to say:

It partook of the nature of a pleasure ground, which a straight avenue would not, and it was desired to bring a portion of the Park as near the city as was possible.

It was desired to avoid the stiff formality, the naked, bald appearance of a straight avenue in a climate where trees take ages to attain sufficient size to give it its only charm, dignity, and where the varieties of trees suited to the purpose do not flourish at all.

It was desired to make the park acceptable to the people in as short a space of time as possible, and the same trees arranged in groups about a gently curved road and paths, would produce a pleasing effect in one-tenth of the time, required for a like result when planted in rows.

The Avenue Reservation is only 275 feet wide, and a curved style of improvement would give it greater apparent extent.

The adjoining property, improved as it will be as residence sites, must be taken as a portion of the landscape to be dealt with, and planting straight rows of trees would be cutting off one side completely from the other, destroying all the charm of the vistas and landscapes, laid open by the other method.

That any of the city's broad streets, or avenues, might be planted after the straight line style.

It was desired to avoid the sweep of the wind, the draft, the channel as it were, which rows of trees planted immediately in the direction from which our trade winds blow, would afford, and which a curving system of roads and walks, the intervening spaces being planted with heavy clumps of trees properly disposed, would avoid.

The avenue by the official grades, had a sidewise slope of different degrees at different points, without regularity, and to conceal this was an object.

Taking our damp climate into consideration, there is much more warmth of feeling to be thrown into the diversified plan, than can be obtained from the straight avenue, which is best suited to southern climates, where trees grow and spread rapidly.

It was important to have a pleasant approach to the Park grounds, for visitors on foot as well as for those on horseback or in carriages.

And it was deemed equally important, to have the avenue drive partake of another character than that of a place for the trial of the speed of horses.

I annex hereto a diagram of the plan as finally approved and adopted, for improving this avenue.

The work of grading the Avenue was about one-third completed, when by your instructions, the building of a road-bed for a drive in the main Park was commenced.

The location of a main drive throughout the extent of a pleasure ground or park, necessarily divides it into tracts more or less suitable for the different purposes of the landscape improver. Thus, in carrying out your instructions to build a drive, I was immediately led to study the disposition of the ground, its capabilities, and the adaptability of its various features, to different purposes—in effect; the formation of a plan.

PLAN.

for the Park

The art of improving grounds has undergone great changes in modern times. It was formerly the practice to make everything assume an artificial appearance, after fixed and regular forms, a seeming attempt to apply the rules of architecture to landscape gardening. Of late years, however, it has become the practice to leave nature as nearly in her normal state as possible, and only to endeavor to hide that which is unsightly; while still concealing the means applied.

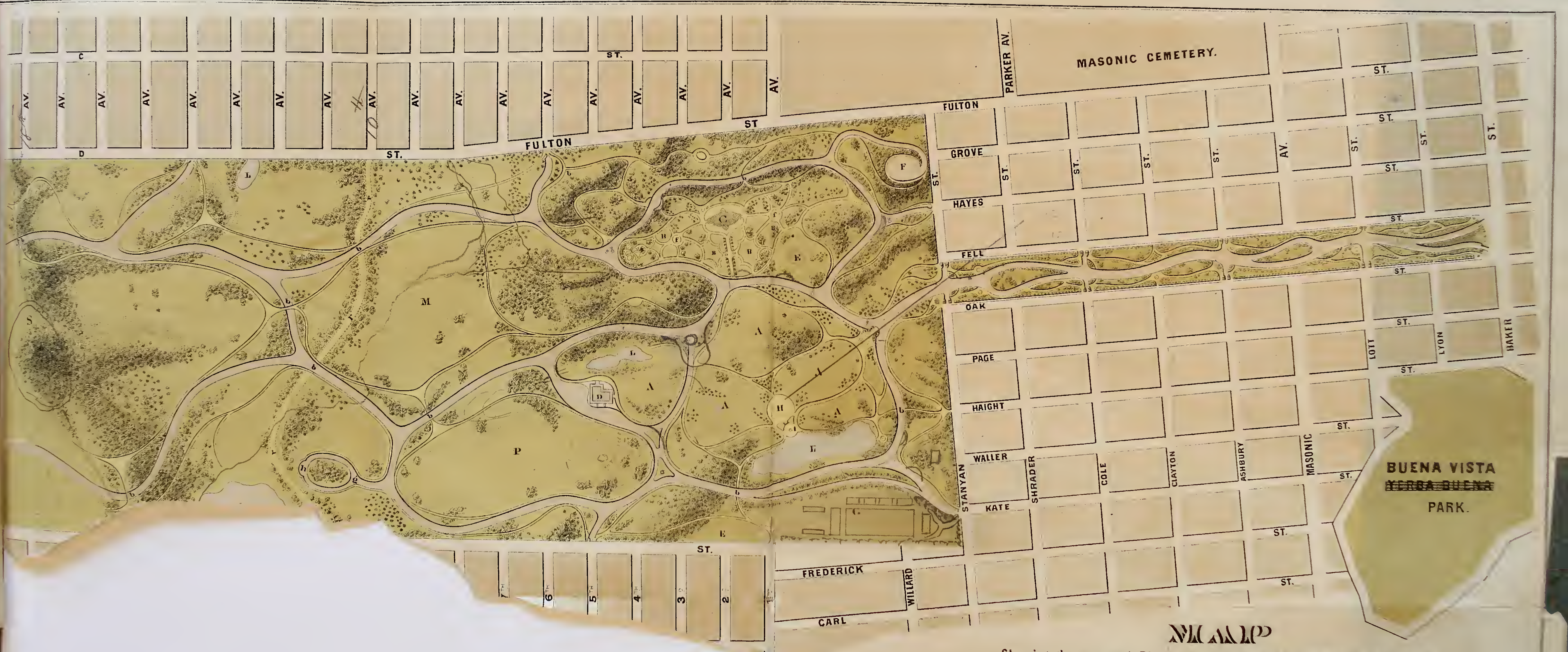
But there are in each instance of undertaking a work of this kind, certain natural characteristics whether of formation, soil or climate, which are to be dealt with boldly, in order to bring out their full good effects or overcome some that are disagreeable or unfavorable. Each locality, having its peculiarities, should be an object of renewed study, so that the plan of operations suitable to one, would be totally unfitted to another. Thus has this investigation of natural phenomena in different countries led, in each instance, to a style of gardening adapted to its peculiar climate, soil, topographical and other features, and thus have originated the various schools of the art of landscape gardening. The

Pacific Coast, and particularly this locality, has very decided natural characteristics, differing greatly from those of our sister States on the Atlantic shores and most other countries, and consequently there is being inaugurated here a new system of applying the leading principles of those methods of improving grounds, which may appear most suitable, under the circumstances, and which applications, may, after years of observation and experience, be moulded into the formation of a new school of the art of landscape gardening. This subject in connection with our Park, is worthy of more attention and study, necessitating much more time than your Engineer has been enabled to give it. It is, therefore, with much hesitation that the accompanying plan of a system of roads, walks and other improvements, of which the drive graded forms a portion, is submitted. It is offered as a study of what character of improvement may be adapted to the grounds, one of several at present in this office, none of which have been perfected. In making a plan for a pleasure ground, there are certain general rules of landscape gardening, and other limitations of an engineering nature, as well as certain popular ideas, to be carried out—and the application of the whole to the site. Without reciting in detail the peculiarities of our Park grounds and climate, to be dealt with, or the various requirements to be met in so doing, I will state in general terms that it has been an object of primary importance to overcome the disagreeable effects of the cold northwest winds and the fogs, which sweep over this peninsula; and in doing this, to preserve a lawn of good extent, which, with the flower garden, the botanical garden, the nursery, children's play grounds, and other spaces devoted to like purposes, shall be naturally well protected ; and in the arrangement of the whole, to lay a foundation for a still greater shielding, to be effected by a judicious system of planting; and in building the drive now in process of construction, as has been said in a former communication to you, it was intended "to fit a graceful "curvature to the natural topography, in such "manner, that the rules of tasteful landscape garden-"ing be combined with the requisites of good "engineering principles, that much of it might be "sheltered from the prevailing northwest winds of "summer, while yet taking advantage of the more "prominent features from which to produce striking "effects in the landscape," at the same time endeavoring to utilize any spare material, that could be obtained by the construction, in preparing other grounds for the purposes spoken of heretofore.

EXPLANATION OF MAP,

SHOWING PROPOSED PLAN FOR IMPROVING THE EASTERN PORTION OF THE PARK.

A.—The Dressed Ground or Lawn.
B.—Flower Garden.
C.—Conservatory.
D.—The Manor House.
E.—Croquet or Childrens' Play Grounds.
F.—Plateau, a Carriage Concourse.
G.—Botanical Garden.
L.—Lakes.
M.—The Meadow.
P.—Parade, Cricket or Base Ball Ground.
S.—Strawberry Hill.
H.—Space for a large Pavilion.
a.—Small Observatory House.
b.—Bridges.
f.—Fountains.
k.—Rustic Pavilion.
p.—The Lodge.
r.—Traffic Road.



MAP

Showing the proposed PLAN of improving the EASTERN PORTION of the

GOLDEN GATE PARK

and the Avenue.

SCALE 620 FEET [illegible]

A FEW WORDS ABOUT THE PLAN.

It is not necessary to enter into any detailed description of the plan, which has been adopted for the avenue. A gently curving drive, of a standard width of 70 feet, occasionally dividing, as shown in the map, into carriage ways, 40 or 45 feet wide; laid on a maximum grade of 1.6 feet rise, in 100 feet horizontal; flanked by well kept lawns, with walks of easy curvature, which are to be planted with bold groups and clumps of trees on the salient points, in such manner as to diminish the force of the winds as much as may be, with here and there a garden pavilion, rustic bench (or such other as may be in keeping), or other suitable resting place. The main entrances are arranged to admit of an easy sweep into them from either of the streets of approach; and the crossings, fixed at every second street, planned so as to play as little part in the landscape of the interior as possible, while yet sufficiently open to debar any danger of collision of vehicles moving in different directions. It is to be regretted that these crossings could not have been arranged so that the traffic and the pleasure travel would be kept separate, by the crossings for the former being carried over, or under, the avenue roads and walks.

At the entrance of the Park from the avenue, the drive is 90 feet wide; on the left, an appropriate lodge or park keeper's house, well guarded and shut in by a mass of foliage in the rear, and almost entirely open toward the road. The landscape presented parkward, from a point in the drive at the crossing of Stanyan street, will be one of a thickly wooded nature, the planting being so arranged on each side of the road, that the clumps and masses overlap each other, which with the aid of the abrupt point of ridge to the right, the knoll in the lawn, somewhat to the left, and the point of the middle hill in the central distance, all heavily wooded, will present a pleasing succession of distances in the foliage, and answer the double purpose of breaking the force of the winds at the head of the avenue, and conveying to the mind of the pleasure traveler the impression that he is about to enter a thickly wooded district—an impression to be quickly and pleasingly dispelled at a point a few yards further on, where three open views are presented. Of these, that forward is down the road, with a fountain, balustrade and light foliage in the foreground, then over a thousand feet of almost unbroken lawn—beyond, an appropriate backing of dark rising ground ; that to the left, lies across 500 feet of lawn, the bridge *b.* in the middle ground, and to the San Miguel hills in the distance; that to the right, is less extended, but affording a sense of security and warmth by the heavy growth upon the ridge, to windward. Here the drive, sweeping gently to the left, increase in width somewhat, on a gentle down grade; when, at the balustrade before the fountain, it divides, the drive to the left again ascending, passes over a walk in the valley at the end of the lake, by a bridge at *b.* from which the view of the lawn and lake will be particularly fine, thence curving to the left, follows the tops of a ridge south of the lake, presenting views alternately to the right, over the lake and lawn, and to the left, over the botanical gardens; thence crossing another walk at the foot of the lake, is carried through the point of the south ridge by a considerable cut, where is offered one of the most extended views of the Park grounds obtainable from the main drive—namely, forward across the meadow to the great traverse ridge.

The road turning to the left at the balustrade by the fountain, after falling slightly, rises to where it again divides. From this point the views are; sharp to the left, across a long stretch of lawn, with the Manor House in the distance; forward, the conservatory and flower garden flanked and backed by heavy masses of foliage. Thence, the road forward is on easy grades, located well down in the valley; that to the right, on an up grade, along the northern side of ridge, to a plateau at the joining of the entrance drives from Hayes street, thence, still up, to the crest of the north ridge at the next division; whence, forward, the view is across a long valley to the Point Lobos Road; the Agricultural Park, with the entrance to the harbor, Point Bonito and the Table Mountain, Marin county, in the distance; to the left, the view is immediately down upon the flower garden, or across a long stretch of lawn to the San Miguel hills. From this point, one drive follows the ridgetop to the west, and thence into the valley again, while the other sweeps around the northeast hill and comes out in a broad, oval carriage concourse. The Plateau, at *F*, where the tourist may enjoy many fine prospects, already traced.

The Manor House, *D*, is situated on the southern branch of the middle ridge, which has been described as an elevated plateau rather than a ridge, the ground gently sloping away from it to the southwest, south, southeast, east and northeast; to the north a steep bank to the little lake, the hill opposite, rising higher than the plateau; to the west, the plateau itself gently rising. The sloping lawn in front of this site, well planted, for the central outlook, hence: the dressed ground toward the lake and fountain, with the Park trees along Stanyan street as background, being overlooked toward the east; the cricket ground toward the southwest; the little lake and opposite hill with pavilion champetre, to the north; a fine stretch of lawn and the Plateau Hill to the northeast, while the point of observation is well protected by higher ground, close at hand, thickly planted toward the west, northwest and north. The transverse traffic road, (*r.r.r.*) running across the Park grounds, from Tenth avenue on the north, to Eleventh avenue on the south side, is located in low ground, for a greater portion of its length, so that it could be built at small expense, to be, by a proper system of planting, kept out of view in the Park landscapes, the drives, walks, etc., being carried over it (where it cuts through a rising ground) on bridges.

It will be seen that the main walks are carried over or under the carriage-ways in several instances. This is in accordance with a well established rule in modern park architecture, and is an arrangement much appreciated by pedestrian visitors; for this class should enjoy not only a view of the drives at various points, but be enabled to cross these roadways with perfect security against injury by passing vehicles. Moreover, this disposition of the walks adds greatly to the apparent extent of the Park in the passing from one pleasure ground to the other without a road for a visible driving line, and supplies additional data and objects for good effects in the picturesque.

The turn, *g. h.*, is on a bold point overlooking the large lake; and it should be remarked of this lake, that the contiguous ground to the north is low and flat, and the lake may be readily extended to a size two-thirds greater than exhibited on the map.

The various secondary carriage entrances have been so arranged that the Park drives might be reached from the city streets by easy grades. They are five in number, which is believed to be sufficient; indeed, the one from Hayes street may well be dispensed with. It was so located for the reason that there is a very steep grade on Stanyan street, from Hayes to Fell, and it was desired to give pleasure travel from that quarter an entrance, which would avoid this grade.

Much of the detail of this plan may well be changed; the subdivisions of the flower garden, particularly; there may be too, to advantage, more narrow winding walks amongst the thick growth on the northern and middle ridges; also a greater number of small garden pavilions, seats and arbors, and further improvements about the lakes, such as boat houses, landings, etc., which detail it has not been considered necessary to introduce upon a diagram, intended only to give a general idea of the plan. Nor yet is the arrangement of the trees to be taken as a definite planning, but merely as having been put in, to give some additional effect to the sketch.

About the middle of the month of August, 1871, instructions were issued, as before stated, to grade a road-bed, for a portion of the main drive, in the Park, which portion was that including the entrance from the Avenue, thence to the right on the up-hill road, thence to the left to top of ridge, thence west on said ridge to the valley again, thence along south of flower garden and to the right around east point of middle ridge, thence along north of little lake and around west of cricket ground, by the turn, and back along southern road to the main entrance again. The necessary detail planning was immediately commenced, upon which to base the work ordered ; and about the first of September, the work of grading was commenced with a force of twenty men in charge of a foreman. This force, varying in number from twenty to sixty men, under one, two or three foremen, as the case might be, and as opportunity was presented to work a greater or less force to advantage, has been kept constantly at work, to the present time. The roadway described has been all graded except that at the entrance, and in so doing, much spare material has been purposely obtained and used in the grading of the valley proposed for the lawn, which was originally, a succession of unsightly depressions or hollows. Much of the long hauling has been done by horses and carts. For a more definite statement of this work, I refer you to the summary of work, hereinafter given.

On the 20th of September, the contract for surfacing the roadway in the Avenue was awarded.

The road-bed was to be dressed and crowned to receive the ballasting at the expense of the Park management, the contract being to place thereon an average of 4 inches of clay and 10 inches of broken rock. The work to be estimated by the superficial foot of covering laid according, to specifications, which were embodied in the contract. The clay for the sub-covering was to be taken from the bed at the western end of the Avenue. The rock was to be obtained outside of the Reservation; was to be first class red rock, and broken to pass through a 3 inch ring.

This work was commenced immediately, and has continued almost uninterruptedly to the present time. I again refer you to the summary of work for a statement of progress made.

The surfacing done thus far is not complete. The material being near the western end of the Avenue, it has been deemed advisible to put on the rock an average of about 8 inches deep, until the full length of the road is so covered, and then, commencing at the eastern end, dress back to the westward, with the remaining 2 inches.

The grading of the road bed in the Park being nearly completed, on the 12th day of December, I received instructions to make preparations for surfacing it with the red rock. On the 14th day of December, a portion of the force was transferred from the grading work to an old quarry, which had once been opened in the rock deposit on the northeast hill, and since then to the present date, the force there has been increased from time to time, as more room was made for work. Much of the time being taken at the start in properly opening the quarry, but little could be accomplished toward the actual work of macadamizing. I again refer you to, and summary of work done for a statement.

It has been before said that the material in this quarry was not of first class. It is not, so far as visible. The object in working it is, that it is most convenient to the higher portion of the road graded, the hauling from it being all down hill. The material as it is, is good enough for the first layer of a road ballasting; it is thought that further developments in the quarry will show a better character of rock.

On the 12th day of December—having received your instructions to prepare the western end of the Avenue grounds for planting—a portion of the grading force was transferred from the road-bed work to the Avenue grounds, and the work of laying off the walks and beds, bordering the drive, was commenced on the blocks west of Clayton street. The fencing was also begun on the following day, and the dressing of the plats, and covering them with the loam, which had been scraped aside and saved before grading, commenced. There is now fenced, dressed and ready for planting nearly all grounds west of Clayton street to the entrance to the Park. A scheme for the arrangement of the trees has been prepared, and about 500 will be set out during the month of January, 1872.

THE NURSERY AND HOT HOUSE.

One of the first steps taken by your honorable body was the establishing of a hot house and nursery on the Park grounds, for the propagation of trees and shrubs, that there might be a supply on hand, when the ground should be prepared for their reception.

It was designed to propagate such plants which, by their rapid development in the soil at hand, would soon present a pleasing aspect and afford a shelter from the wind for the frequenters of the grounds, as well as protection for other more desirable shrubs and trees, which, as they attained sufficient development, could take the places of their more thrifty, but less picturesque or beautiful neighbors.

In the month of November, 1870, a green house, with adjoining hot beds for the starting of seeds, was built, and during the following month 30 or 40 varieties were planted. These have, from time to time, been added to, and have grown with varying thrift, until, at the present time, there are—

About 1,500 plants, from to 2 to 4 feet in height, potted, ready for setting out, of the fifteen varieties of the Australian Gum (Eucalyptus).

About 1,200 plants, from 1½ to 3 feet in height, potted, ready for setting out, of ten varieties of Acacia.

About 6,500 plants, from 6 to 12 inches in height, planted in the nursery, of various varieties of Pine (Pinus).

About 3,500 plants, from 10 to 18 inches in height, planted in the nursery, of several varieties of Cypress (Cupressus).

About 350 plants from 4 to 8 inches in height, potted in green house, of the Pepper tree (Schinus molle).

Besides several thousand plants of smaller size, of the various varieties mentioned; and of other kinds, potted in the green house; of which 400 are of the Big Tree (Sequoia gigantea).

500 Redwood (S. sempervirens).

500 Port Orford Cedar.

500 Pittosporum.

And twenty to thirty thousand plants, of various varieties of shrubs and trees, in seed pots.

From this statement it will be seen, that there are now nearly three thousand young trees, suitable for planting in the grounds, which can be prepared for their reception this season, and that there will be 17,000 others of the same, and additional varieties, ready a year hence, besides very many others in progress. Communication has been opened with various seedsmen and horticulturists of other states and countries, by which it is hoped to secure the seeds of many desirable plants, especially adapted to our climate and soil, some of which will be particularly valuable under existing circumstances, as hereinafter mentioned.

SUMMARY OF WORK DONE IN THE AVENUE.

The Avenue is graded from Stanyan to Lott street, with the exception of 4,000 cubic yards of material to be moved near Ashbury street, and about 500 cubic yards of filling, between Shrader and Cole streets. 101,500 cubic yards of cutting, and a corresponding amount of filling, has been done.

About one-half of the drive is dressed and shaped in readiness to receive the surfacing, of which about 125,000 square feet has been macadamized; viz: the north half of road, 600 feet west from Cole street; full width of road, 700 feet east from Cole street; thence, the north half of road, easterly, to a point 200 feet east of Lott street.

SUMMARY OF WORK DONE IN THE PARK.

11,700 feet of roadway, 40 feet wide, has been graded (width to be increased).

20,000 cubic yards of filling done in shaping valley for Lawn.

5,000 cubic yards of cutting done in shaping valley for Lawn. (Balance of material was obtained from road construction).

The quarry has been opened and dressed off.

16,000 square feet of macadamizing done.

The nursery in progress as hereinbefore stated.

Having completed the statement of that which has been accomplished, it is deemed proper to revert to the important matters of the future, especially calling your attention to those which it will be necessary, and others eminently fitting, to receive your consideration at the commencement of the coming year:

First. It will be necessary to complete the fencing of the Avenue and Park grounds. The character of the fence need be but a simple four or five rail fence—its place to be taken by a hedge, of some appropriate shrub, in most places, in the future, or by some more ornamental style of work, when other more important things shall have been accomplished.

Second. It will be necessary to perfect the plan, in detail, of drives and walks in the east Park, in order that any work undertaken be not amiss, and that a proper system of planting be devised, so that the ground may be prepared for the trees which will be ready the ensuing season.

Third. It will be necessary to provide ample and apprporiate means for watering, during the approaching dry season, the grounds of the Avenue, which shall have been planted. This will necessitate a system of conducting pipes with hose attachments, laid through the grounds. The water may be drawn from the ground, either by wind mill power, or that of steam. The former, doubtless, would be the most economical, and sufficiently effective, plan for the present. The mills might be made ornamental and agreeable to the eye in some respects, but it cannot be expected that they be in keeping with park architecture, or landscapes in the modern pleasure ground. On the other hand, a steam pump could be located and arranged, so as not to be offensive to the cultivated taste; would ensure an unfailing supply of water, and would always be of use under any system of irrigation, from the water works of the future.

Fourth. It will be necessary to provide other appropriate means for sprinkling and rolling the drives.

Fifth. In order that the full benefit may be derived from the work already done, the surfacing of the roadway, graded in the Park, should be immediately finished, as also that at the entrance, and the drive to and including the Plateau, so that these portions of the work, together with the Avenue, may be opened to the public use.

Sixth. The grounds of, and adjacent, to "The Lawn," should be graded, shaped and cultivated, ready for planting the ensuing season, as well as other limited localities, designed to receive notable clumps or masses of wood.

The matter of arresting the sand drifts on the western portion of the Reservation, should receive early consideration. A proper system could be devised and carried out, at comparatively small expense, which would result, at the end of a few years, in making that now desolate region a thriving young forest. There are trees, shrubs and minor plants, which have shown their adaptability to cultivation in drifting sands, and which have effectually reclaimed such tracts. The seeds of some of these, the more important, have already been sent for. Further steps should be taken in this direction, and a place prepared for their reception and propagation.

It will be necessary to devise some means, also, for stopping the encroachment of the sand from the sea beach.

In order to successfully accomplish these ends, the entire area ot sand drift must be taken in hand at the same time—thus necessitating a corporation of the owners of adjoining property with the management of the Park.

In the treatment of the eastern portion of the reserve, it has been designed to cover the larger area of that slope of the great traverse ridge, with heavy masses of foliage, and in the work of reclamation, this could be taken into consideration, and the arrangement, both as to position and variety (to a great extent) be effected.

Of the probable cost of the several works proposed, during the ensuing year, I have the honor to present the following estimate:

	WITH RECLAMATION.	WITHOUT RECLAMATION.
Fencing	$ 5,000	$ 1,800
System of Irrigation	8,000	8,000
Surfacing and Trimming Roads in Park	20,000	20,000
Surfacing and Trimming Walks in Avenue	3,800	3,800
Grading and shaping Lawn, Etc., together with trimming and surfacing walks therein, and remaining drives adjacent thereto	20,000	20,000
Maintenance of Grounds	3,000	3,000
Perfecting Plans, Engineering and Superintendence	8,000	6,000
Nursery and greenhouse expenses	5,000	2,500
Manure and surface soil	8,000	4,000
	$80,800	$69,100

It would be proper to add about three or four thousand dollars, to either of the above amounts, for bridges and architectual works, necessary to accompany this stage of the other work; also such amounts for contingencies, office expenses, etc., as would bring the amounts to $90,000 and $75,000 respective.

With an outlay of $75,000, during the ensuing year, in addition to the completion of the work already contracted for, the Avenue will be complete, with the exception of the perfection of the planting thereof. There will be a large pleasure ground ready for planting in the Park; there will be 3 miles of drive-way open to the public, and much of the eastern Park will be improved otherwise. An additional $15,000 will have made a decided step toward reclaiming the sand drifts, which year by year advance upon the city. All of which is respectfully submitted.

WILLIAM HAMMOND HALL,

Office of the Superintendent of Golden Gate Park and Avenue, San Francisco, December 30*th*, 1871.

Wm Ham Hall

SECOND
BIENNIAL REPORT
OF THE
SAN FRANCISCO
PARK COMMISSIONERS.

1872-73.

November 30-73

SAN FRANCISCO:
B. F. STERETT, STEAM BOOK AND JOB PRINTER
No. 532 Clay Street, opposite Leidesdorff.

1874.

Wm. Ham. Hall.

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1874.

BOARD OF PARK COMMISSIONERS.

E. L. SULLIVAN,
S. F. BUTTERWORTH,
WM. ALVORD.

OFFICERS.

E. L. SULLIVAN	*President.*
J. T. FLEMING	*Secretary.*
WM. HAMMOND HALL	*Engineer and Superintendent.*

OFFICE:—Rooms 7 and 8, on 3d Floor, 302 Montgomery Street.

REPORT

OF THE

PARK COMMISSIONERS.

To the Legislature of the State of California:

The Park Commissioners of the City and County of San Francisco respectfully submit, in obedience to law, the following report and statement of receipts and expenditures.

It would be a waste of time to advert to the hygienic and esthetic influences of pleasure grounds. These were known to a remote antiquity. It was reserved for modern experience to demonstrate that outlays of this nature constitute a profitable investment; and it has been thoroughly proved in all other cities where Public Parks have been made that the increase in the amount received from taxation, on the enhanced value of property resulting from Park improvements is largely in excess of the interest on the money expended.

The following named persons are the present Park Commissioners:—E. L. Sullivan, S. F. Butterworth and William Alvord. The Engineer and Superintendent of the Board is William Hammond Hall; its Secretary, J. T. Fleming.

One of the vacancies filled, since the last report made by the Commissioners, was occasioned by the death of D. W. Connelly, a highly esteemed citizen, an efficient legislator, and one of the earliest advocates of Park Improvement.

The receipts of this Board, since its organization, have been as follows:

1.—From the sale of seventy-five bonds of one thousand dollars at par, in gold coin	$75,000	00
2.—Interest on deposits	338	93
Total receipts at date of last report	$ 75,338	93
Of this there had then been expended, (See Exhibit A,)	42,083	36
Leaving a balance of	$ 33,255	57
Add accruing interest on deposit	57	07
Net balance at the beginning of the present term	$ 33,312	64
3.—From the sale of seventy-five bonds under the Act of the last session, to the best bidder	69,750	00
4.—From the sale of seventy-five additional bonds under the Act of the last session	68,165	00
5.—From contributions by property holders for their quota under the last mentioned Act	2,902	86
6.— From claimants for impounded animals	104	50
7. From other penalties	285	00
Total	$174,520	00

These several sums having been deposited, as the amended law directs, with the Treasurer of this City and County, *no interest on deposits has accrued.*

There has been expended since the last report of this Board the sum of $165,316 62, (See Exhibit B.) The balance on hand at the date of this report is $9,203 38.

PARK IMPROVEMENT.

At the beginning of the year 1872, improvements were being slowly carried forward, with but a small balance of cash to the credit of the fund when compared with the magnitude of the work to be done. As soon as it became apparent that adequate legislation would be obtained, the work was prosecuted so energetically that the remaining means were soon exhausted. The liberal public spirit of Mr. Abraham Seligman, then the Treasurer of this Board, enabled the Commissioners to make the most of the waning spring; he advanced, without any charge for interest, nearly the sum of $17,000.

By the end of July, 1871, three miles of roadway in the Park, and one mile of wider drive in the Avenue were opened to the public; though the approaches were uninviting, and the surfaces rough, hundreds of visitors daily resorted to these drives. From that time, the policy of the Commissioners has been to regulate the number of hands employed according to the exigencies of the varying reasons, the relative necessity of immediate improvements, and the resources at the command of the Board.

PRESENT CONDITION OF THE PARK.

The Eastern portion, containing 280 acres, and the Avenue leading to it, are fully enclosed by substantial fences. Eleven large entrance gates have been erected at convenient points.

Twenty-two thousand trees have been set out which are growing well.

Extensive nursery grounds have been added, properly prepared and provided with every necessary appliance. They contain 20,000 young trees suitable for transplanting at the present season, and 23,000 well-rooted seedlings and cuttings for the next season.

About 18,000 feet of water-pipe, from 1¼ to 4½ inches in diameter have been laid. Every needful contrivance known to Engineering has been added to facilitate the distribution of water.

The following structures have been erected: a stable, a teamster's house, a barn, a small office, an engine house, and a gate-keeper's lodge.

As to the grading, macadamizing, manuring and surface coating of the soil, the Engineer's report is hereby referred to.

VISITORS.

Exhibit E gives an approximative record of the number of persons who have visited the Park during the present year. The count was made only at the main entrance to the Avenue by an assistant-keeper stationed there on special duty to enforce certain Park Ordinances. The record is therefore necessarily incomplete. Yet it shows that 74,980 vehicles, 15,033 persons on foot and 14,983 on horseback passed through that entrance. Leaving out of consideration the number of persons who entered the grounds through the other gates, it is a fair estimate that within the last year some two hundred and fifty-five thousand visitors entered the grounds through the Avenue for objects of pleasure and exercise.

The next table is not without interest. It shows a classification of the weather, as experienced at the Park.

In the absence of a meteorological apparatus, these observations were simply guided by the judgment of the Park-keeper, and the classification is rather popular than scientific. For instance, there have been, during the eleven months last past, 139 pleasant days, 82 days when light winds were blowing, or the sky slightly overspread with clouds, 95 showery, foggy, cold or very windy days, and 18 rainy days.

A comparison of the record of visitors with the atmospheric table shows that during the 334 days ending at the date of this report, the weather was inviting to visitors for whole days and parts of days, amounting altogether to 239 days.

PARK MAINTENANCE.

Sprinkling, clearing and dressing roadways, watering, trimming and supporting trees are the chief items under this head. With increased resources, the experience acquired in these particulars may be successfully applied on a larger scale.

It has been the endeavor of the Commissioners in studying economy to retain the utmost simplicity in the organization of their force, avoiding for the present the multiplying of departments. They have especially felt the want of hands skilled in particular manipulations. But the vigilance of the overseers and the willing co-operation of intelligent subordinates have made up somewhat for this deficiency.

WATER.

For obvious reasons, the water supply became an early subject of solicitude to the Commissioners. Although the mains of the Spring Valley Water Works lay at a convenient distance, and with all needful head, it was deemed more prudent, before resorting to this source, to test the capacity of the soil itself. A well was dug which yielded 25,000 gallons of water per day. Fortified by this partial success, though unable to prosecute the inquiry any further, they negotiated with the Spring Valley Water Company, and obtained what they considered fair terms, viz.:—100,000 gallons per day for $400 per month. Under this contract all the water that could be distributed to advantage has been drawn and will continue to be drawn. In July of the present year, however, a decision of the Supreme Court in relation to the supply of water by said Company for Municipal purposes compelled the Commissioners to decline approving any further water bills. In this they acted from a sense of public responsibility. Fully appreciating this, the Company has not withheld the supply, but looks to the future for compensation. These complications should be borne in mind in connection with another portion of this report which treats of a Reservoir.

GOVERNMENT OF THE PARK.

The Commissioners have sparingly used the limited power lodged in their hands for enacting Ordinances. The following Ordinances have been issued by the Board, and these only after their necessity became apparent, viz.:—No. 1.—Forbidding trespass upon the reservations; No. 2.—Regulating the use of the Parks; No. 3.—Regulating traffic travel upon the Park drives. Copies of the said orders are annexed, and also an exhibit marked "D," showing the number of arrests.

RECLAMATION OF SANDS.

Amongst the least expensive, but by no means the least in importance, of the works prosecuted at the Golden Gate Park in the past year, have been those connected with the experiments upon the sand downs. In their last biennial report the Commissioners expressed their conviction that these sands could be effectually reclaimed at small expense. They now have to report that their experiments have demonstrated this proposition ; and refer for details to the able and comprehensive report of the Engineer of the Board upon the subject. The result has surpassed anticipation ; and it is believed that a permanent reclamation of these sand downs can be achieved at an expense not exceeding $20 per acre. So much of this formation as is reserved for Park purposes can ultimately be made into a noble Forest park at a total expense not exceeding $100 per acre.

Here, as in some other cities, the most forbidding site has been selected for Park Improvement, but while elsewhere the expense of drainage and other agencies of development have been enormous, San Francisco may congratulate itself that these sand-drifts looked too forbidding for private selection. Should adequate means be put at the disposal of the Commissioners for energetic work on a considerable scale, they will show such results as will stimulate the owners of adjoining property to turn the desert into a garden.

BUENA VISTA PARK.

The Commissioners, feeling the necessity of concentrating their resources on the principal Park and its immediate approaches, have merely enclosed the Buena Vista Park and erecting there a small dwelling for the keeper. It should not, however, be any longer neglected. The fine prospects of Bay and City scenery which it presents will, together with its other natural advantages, make it a most popular resort. The small Park around Mountain Lake should also be improved at once, as an indispensable feature of the general plan.

GREAT HIGHWAY.

y Whoever examines the topograph of this Peninsula, and considers the prevailing direction of the summer winds, will conclude that the strip of land along the Ocean Beach reserved by the City as a "Great Highway," will constitute, when properly reclaimed, a bulwark for all improvements to the Eastward of it. This auxiliary should be immediately placed under the control of the Park Commissioners. In all such work unity of action and of design signifies economy and success. But the "Great Highway" is not destined to be merely an auxiliary to the Park; it can be made a drive of rare attraction and beauty.

A STORAGE RESERVOIR.

Whatever may be the ultimate adjudication in the questions above referred to as now pending between the City and the Spring Valley Water Works, it is indispensable that a reliable supply of water be stored up during the rainy season for Park purposes. No site suitable for a competent Reservoir is to be found within the limits of the tract assigned to the charge of this Board. In its immediate vicinity, however, suitable places can be selected. It is earnestly urged that the Board be authorized, by legislation, to condemn and appropriate some proper site for such Reservoir.

Many valuable gifts have been presented in aid of the Park Improvement. A list is appended, and the Board takes this as a fitting opportunity to tender their thanks to the generous donors, as well as to the many correspondents who have forwarded valuable information.

They also feel that they would be wanting in justice did they not express their high appreciation of the intelligence, industry and integrity of the Engineer and Superintendent, William Hammond Hall, who has been in a very great degree instrumental in whatever success they may claim for the work so far as prosecuted.

In conclusion, the Commissioners request your earnest attention to the subject of further development of the Parks. No fact has been more clearly demonstrated by experience than that a parsiminious policy at the commencement of Park Improvements is the reverse of economy.

Works of this nature when once begun should be carried rapidly forward to a condition where they can withstand the wear and tear of usage. When the resources for prosecuting such works are too limited, temporary expedients have to be resorted to, which in time must be renewed at additional cost.

It is more expensive to maintain unfinished or poorly constructed work than that which has been substantially executed and brought to its destined condition.

Respectfully submitted,

E. L. Sullivan,
S. F. Butterworth,
William Alvord,
Park Commissioners.

San Francisco:
November 30th, 1873.

PARK FINANCES.

REPORT OF THE SECRETARY.

EXHIBIT A.

Park Commissioners' Receipts and Disbursements, from August 1st, 1870, to January 8th, 1872.

RECEIPTS.

From Park Bonds:	
Proceeds of Sale of 75 Bonds of $1,000 each, at par	$75,000 00
From Interest:	
Interest at the rate of 1 per cent. per annum, on the daily balances in Bank, from August 1st, 1870, to January 1st, 1872.	338 93
	$75,338 93
Balance on hand, Jan'y 8th, 1872,	$33,255 57

DISBURSEMENTS.

For Park Improvements..........	$28,638 62
" Surveying and Engineering ..	7,068 00
" Salaries	2,920 50
" Nursery	2,319 19
" Office Rent....................	500 00
" Stationery and Printing	348 25
" Advertising..................	186 75
" General Expenses............	55 75
" Office Expenses	46 30
Balance of Cash on hand, January 8th, 1872	33,255 57
	$75,338 93

EXHIBIT B.

Park Commissioners' Receipts and Disbursements, from January 8th, 1872, to November 30th, 1873.

RECEIPTS.

From Balance Cash, Jan. 8th, 1872,	$33,255 57
" Interest....................	57 07
" Product of Sale of 75 Bonds of $1,000 each, at 93 cents...	69,750 00
" Product of Sale of 75 Bonds of $1,000 each; sold 35 at .90 70-100, and 40 at .91 05-100	68,165 00
" Street Fund................	2,902 86
" Police Fund................	285 00
" Pound Fund	104 50
	$174,520 00
Balance Cash on hand, November 30th, 1873	$9,203 38

DISBURSEMENTS.

For Park Improvements..........	$144,384 14
" Superintending, Surveying, and Engineering..........	6,300 00
" Street Fund	8,973 17
" Salaries	3,024 50
" Nursery..........	226 60
" Office Rent	570 00
" Advertising	984 70
" Stationery and Printing.....	539 01
" General Expenses.........	216 75
" Office Expenses	97 75
Balance Cash on hand, November 30th, 1873	9,203 38
	$174,520 00

174 520
33 255 57
141,264.43

EXHIBIT C.

Park Commissioners' Receipts and Disbursements, from August 1st, 1870, to November 30th, 1873.

RECEIPTS.	
From Park Bonds: Product of sale of 75 Bonds of $1,000 each, at par	$75,000 00
" Interest	396 00
" Product of sale of 75 Bonds of $1,000 each, at 93 cents	69,750 00
" Product of sale of 75 Bonds of $1,000 each; 35 at .90 70-100, and 40 at .91 05-100,	68,165 00
" Pound Fund	104 50
" Police Fund	285 00
" Street Fund	2,902 86
	$216,603 36
Balance Cash on hand, November 30th, 1873	$9,203 38

DISBURSEMENTS.	
For Park Improvements	$173,022 76
" Superintending, Surveying, and Engineering	13,368 00
" Street Fund	8,973 17
" Salaries	5,945 00
" Nursery	2,545 79
" Office Rent	1,070 00
" Advertising	1,171 45
" Stationery and Printing	887 26
" General Expenses	272 50
" Office Expenses	144 05
Balance Cash on hand, November 30th, 1873	9,203 38
	$216,603 36

San Francisco, November 30th, 1873.

J. T. FLEMING,
Secretary.

EXHIBIT D.

Number and Classification of Arrests made by the Park Police, during 1873.

1873.	Shooting.	Fast Driving.	Other Offences.	Total.
January	....	....	....	....
February	4	4	1	9
March	2	2	....	4
April	2	1	....	3
May	....	....	....	....
June	2	....	....	2
July	3	....	....	3
August	1	....	....	1
September	3	....	....	3
October	4	....	1	5
November	1	....	....	1
Total	22	7	2	31

EXHIBIT E.

Tabulated Statement of Park Visitors, Main Entrance only.

1873.	Vehicles.	Persons riding in Vehicles.	Equestrians.	Pedestrians.	Total.
January	4,833	14,499	1,092	1,230	16,821
February......	2,876	8,628	1,138	775	10,541
March	6,041	18,123	1,267	1,276	20,666
April *........	3,577	10,731	1,232	1,197	13,160
May *....	3,999	11,997	594	1,236	13,827
June	7,146	21,438	1,230	1,405	24,073
July...........	7,258	21,774	1,385	1,267	24,426
August........	8,658	25,974	1,638	1,632	29,244
September	8,625	25,875	1,595	1,467	28,937
October.......	10,308	30,924	1,876	1,530	34,330
November	11,659	34,977	1,936	2,018	38,931
Total...	74,980	224,940	14,983	15,033	254,956

* The decline of travel in these months was owing to the prevalence of the epizootic.

EXHIBIT F.

Table showing the classification of the Weather at the Park.

1873.	I. Fine and pleasant days.	II. Cloudy days, slight winds prevailing.	III. Showery, foggy, cold, or very windy days.	IV. Rainy days.
January.........	13	11	5	2
February	9	6	4	9
March	19	4	7	1
April	14	5	8	3
May	12	7	12	......
June	10	7	13	......
July	10	7	14	......
August..........	11	10	10	......
September	9	8	13	......
October.........	17	10	3	1
November	15	7	6	2
Total.....	139	82	95	18

EXHIBIT G.

Table showing the number of Accidents that happened at the Park.

(Most all of these mishaps were of a trivial nature.)

1873.	ACCIDENTS TO		Total.
	Saddle Horses.	Vehicles.	
January	......	......	......
February	......	1	1
March	.....	......	......
April	......	1	1
May	......	1	1
June	......	2	2
July	......	3	3
August	1	3	4
September	......	1	1
October	......	1	1
November	1	3	4
Total	2	16	18

EXHIBIT H.

Table showing the time of opening and closing the Park Gates.

1873.	Opened at	Closed at
January, February	6.30 A. M.	6.00 P. M.
March, April	6.00 "	6.30 "
May, June, July, August	5.30 "	7.30 "
September, October	6.00 "	6.30 "
November, December	6.30 "	6.00 "

EXHIBIT I.

Table showing the number and classification of Animals impounded, found trespassing within the Park Limits.

1873.	Horses.	Cows.	Heifers.	Total.
January	....	14	1	15
February	1	....	....	1
March	....	2	....	2
April	2	1	....	3
May	....	15	....	15
June	2	10	....	12
July	....	1	....	1
August	1	8	....	9
September	....	....	3	3
October	....	....	....	....
November	....	13	....	13
Total	6	64	4	74

EXHIBIT J.

Record of Donations to the Park, received by this Board.

From J. C. Morrison, Jr.—One Magnolia Tree.

" Mrs. S. G. Beatty—Three Century Plants.

" Hon. Wm. Alvord—Twelve Rose Bushes; one Japanese Palm.

" Mrs. Atkins Massey—One Century Plant.

" John Davidson—Ten Veronicas; one Calicanthus Floridus; five Lauristinus; six Fuchias; three Weeping Willows; fifty Rose Bushes, different varieties.

" David Neely—One Araucaria Glauca; one Brachychita paperfolia; one Banksia grandis; one Jaguanaria patersonii.

" W. W. Kelly—One Century Plant.

" The United States Department of Agriculture, through the courtesy of Hon. A. A. Sargent—Eighty packages of different varieties of Ornamental Tree and Shrub Seeds.

" James Stern—Twenty-five Cactuses.

" Edward Bosqui—Twelve Cuttings of Palma gadsonia.

" Captain Isaac Harding—One Tree Fern from Australia.

From R. M. Brereton—One Package Marum or Sand Grass Seed.

" Hon. H. N. Bolander—Five Packages of different varieties of Seed.

" James Hutchinson—Thirty Greenhouse Plants, consisting of twenty choice varieties.

" Thomas Meherin—Twenty choice varieties of Trees, Shrubs, and Greenhouse Plants.

" Baron F. von Mueller (Australia)—Eighteen packages of different varieties of Seed.

" E. Norton—Six Cactuses; one Euphorbia.

" Mrs. Eldredge—One Cycas revoluta.

" Mr. Forbes—Six Camellias; six Azaleas.

" H. B. Alvord—Nine Pampas Grass Roots.

" Mrs. Dr. Keeney—Selection of Plants.

EXHIBIT K.

Names of persons to whom this Commission is indebted for valuable correspondence and other favors.

Hon. E. B. Washburn, U. S. Minister to France.

His Excellency Duke de Broglie, Minister of Foreign Affairs, France.

Hon. Edmond Bruil, Consul General of France, at San Francisco.

Hon. G. O'Hara Taaffe, Consul for Denmark, San Francisco.

Hon. Charles Duisenberg, Consul for Germany, San Francisco.

Proprietor Thygeson, Merchant, Denmark.

Georg Greiersen, Merchant, Denmark.

Baron Fred. von Mueller, Director Botanical Gardens, Melbourne, Australia.

Hon. Ferd. de Lesseps, President Suez Canal Company.

Col. James L. L. F. Warren, Editor *California Farmer.*

Hon. Fred. Law Olmsted, President New York Park Commission.

Hon. James de Fremery, Consul of the Netherlands, at San Francisco.

APPENDIX A.

REPORT OF THE ENGINEER

UPON THE

MANAGEMENT OF SAND DOWNS, WITH AN ACCOUNT OF THE EXPERIMENTS CONDUCTED AT GOLDEN GATE PARK, AND SUGGESTIONS FOR THE PROSECUTION OF THE WORK OF RECLAMATION THERE CONTEMPLATED.

Office of the Engineer to the
Park Commission.

To the Honorable Board of Park Commissioners,
San Francisco:

Gentlemen—

In accordance with your instructions, I have investigated the subject of Reclaiming Shifting Sand Downs, and caused experiments and observations to be made upon the sands at Golden Gate Park, and as the result of these studies, I have the honor to submit the following report.

Very Respectfully,

Your obedient servant,

Wm. Hammond Hall,
Engineer.

RECLAMATION OF SAND DOWNS.

From the date of the agitation of the matter of a Park for San Francisco, the locality since chosen for its site, became the subject of unintentional misrepresentation caused by a general want of knowledge concerning the management of drifting sands. Not long since, the assertion that any vegetation would thrive on these shifting dunes in their natural state, would have met an incredulous reception. But in older countries where the present state of agricultural science combines the results of many years of experience with careful observation, as in the sea coast division of Europe, or even in newly settled lands where matters so nearly connected with the general welfare are placed in scientific hands for development, as in Australia, the public mind would have been earlier enlightened upon this subject, and there would not have been such uncalled for assertions as have been made to the detrimentof the present Park Reservation.

Thus, at its commencement, the improvement of the site as a pleasure ground, was greatly hampered by an under estimate of its capabilities, and an exaggerated idea of the probable cost of the work, arising from the general idea that all the land was situated upon the shifting dunes, and a misconception of the nature of the works necessary for their development.

The fact that two hundred and seventy acres of the reservation embraced a tract susceptible of being made pleasurable in a marked degree, by the construction of a few miles of carriage road, was entirely overlooked, as well as the difficulty of cultivating the other portion, upon the downs, over-estimated.

In the abstract matter of reclaiming shifting sands by plantation there is no lack of precedent; the landes of France, the polders of Holland, and the heaths of Denmark have all been the scenes of operations of this kind, extending over thousands of acres, each of which has been marked of late years by the most signal success; while equally gratifying results have been obtained upon portions of a vast sand-drift on the Baltic seaboard of Prussia, at various points on the coasts of England and Ireland, and the European shores of the Mediterranean.

These several works, carried on as they have been under varied conditions of climate and through long series of years, were originally projected upon many different p'ans, and prosecuted by the employment of numerous engineering expedients, and the use of a great variety of vegetation. So that the adoption of one particular method or plant has been at times recommended here by the representatives of the one country, while other means have found advocates in those who have happened to notice their efficacy in some other locality.

The question then has been, not "Can these sand-hills be covered with verdure?" but "Which of the methods heretofore employed is most applicable in this case?" or "Are there other means at command likely to produce as good or even better results?"

Hence it is that by a consideration of the means used elsewhere, as well as a careful study of the characteristics of the case in hand, a just appreciation of its bearings is to be arrived at, and a comprehensive scheme devised for its management.

The improvement of seaboard sand downs may be classed under two distinct departments of work, namely: arresting the sands brought upon the beach by the ocean waves, which operation must result in the final stoppage of all advance from this source of supply; and the holding of the already drifted sand of the downs themselves, with the production of vegetable growth thereon.

In the prosecution of the earlier experiments, of which there is any record, in this field, the former division was regarded as a purely engineering work, and the latter was left to agricultural resources alone. Thus such expedients as heavy artificial bulkheads and sea-walls were resorted to, with a view to accomplishing the first end; while the simple sowing of seeds, which were left to the mercy of the winds, was made use of to attain the last named purpose; the one class of improvement involving enormous expense and attended with but partial success, the other resulting in total failure.

The two arts mentioned then combined their efforts; engineering being assisted by agriculture, and lending a helping hand in return; each still preserving a predominant influence in its own department; both endeavoring to guide the energies of nature rather than oppose them, and the result has been a complete success.

Man, as the director, with the forces of nature as laborers in the field, now readily converts these wandering hillocks into fixed and productive features of topography.

The engineering works of constructing barriers against the sea were modified to mere banks of sand, erected by the winds and waves themselves, under man's guidance, bound together by the matted roots of plants which were found to thrive thereon, and but slightly protected on the water slope by some artificial means. While the growth of vegetation upon the downs was facilitated by a series of protecting palisades or layers of fascine coverings.

Of the two departments of work, that to be performed upon the beach is the most important; for it is found that the source of supply being cut off, the sands of the shifting dunes gradually become clothed with vegetation by spontaneous growth; while, on the contrary, a constant and unchecked deposit of sand upon the beach, by its drifting over, will totally defeat any attempt at cultivation upon the downs.

The engineering expedients resorted to in both departments of sand down reclamation have varied greatly with the changing circumstances under which such works have been prosecuted.

The agricultural operations are confined to the simple propagation of plants from roots, cuttings and seeds upon them.

Without referring at all to botanical arrangement, the plants best adapted to cultivation on down sands may be divided into two classes, of which the first embraces those trees and shrubs which have very long tap roots, diving deep into the body of the formation, as it were, for sustenance: the second embodies such grasses and creeping or spreading plants as throw out numbers of interlacing fibrous roots, persist in pushing their tops above the drift which may cover them, root afresh at every joint so covered, and thus build up a hillock, throughout whose bulk their ramifying rootlets extend, for themselves. The plants of the former class will not admit of much sand being drifted over them, and therefore, as well as for other reasons, are suited to plantation on the body of the downs where the shifting of the surface sands is to be immediately stopped. Those of the latter class will not flourish to their fullest extent unless there is a constant fresh supply of the silicious particles blown upon them, and are consequently best adapted to the beach works.

In the annals of down reclamation two names stand forth prominently as those of organizers of successful experiment. Bremontier, an engineer of public works in France, was the first person who systematically pursued the cultivation of tap-rooted plants upon sand downs. His labors were prosecuted on the shores of the Gulf of Gascony, in 1787 and several succeeding years. About the same time the Danish Government, under the administration of Reventlov, instituted a well-considered scheme of planting the second class of plants for the reclamation of the sands of Jutland, which succeeded. And thus Reventlov is accredited with their introduction, although Linnaeus, the great naturalist, first suggested the employment of the principal plant of this class (*A. arenaria*) for the purpose, and although they had been previously used in Holland, to some extent, as auxiliaries of engineering expedients in consolidating the dykes of sand.

SAND DOWNS OF FRANCE.

The downs of the Gulf of Gascony, embraced by the departments of the Gironde and the Landes, extend from the mouth of the Adour to that of the Garonne, a distance of 150 miles, and have an average breadth, inland from the sea-shore, of three and one-eighth miles, covering an area of about 300,000 acres. Their extreme hight is 330 to 350 feet, which elevation is reached near their inland border, about midway of the belt, where it attains the greatest breadth, namely, five miles. The advance of these sands has been variously estimated at from fifteen to sixty feet per year, and had been going on for ages, covering up whole districts of farming land and entire villages.

Many futile attempts had been made at various points to stay the progress of this all-devouring monster by individual inhabitants of the districts, by municipal and provincial authorities, but all without success. In 1780 Government aid was invoked, after repeated complaints of the threatened communities. Nothing was done, however, until 1787, when M. Bremontier, at that time Chief Engineer of the Department of the Gironde, commenced a series of experiments with a view to establishing practically the tenability of his theory, which was, substantially, that nature could be made to clothe the downs with verdure if properly guided by art.

He proposed to sow the downs with seeds of pine, broom and furze, and prevent the drifting of the sand, temporarily, by artificial means, such as low woven fences or light coverings of brush, until the young plants springing therefrom would be large enough to protect themselves and the sands also.

The management of drifting sands had been attempted upon the coast of Holland and along the shore of Denmark, as well as at some points on the border of the British Isles, but no success had been achieved by any plan which depended for its accomplishment upon the vegetable growth which the sand itself was capable of sustaining. All the methods employed involved such heavy expense for artificial works, in the way of bulkheads to resist the action of the waves at the beach, or coverings and fertilizers to check the drift and facilitate growth on the downs themselves, that their use was only justified where some more important object than the reclamation of the sands was in view; such as the preservation of harbor or river channels, or the protection of valuable lands which the sands threatened to cover.

Bremontier made a scientific study of his subject, observed the action of the waves upon the beach in bringing up the sand, and watched the phenomena of its transportation inland to the utmost limit of the belt. He noticed the movements of the sand itself, the formation into dunes, and their progress. He demonstrated the presence of moisture the year round, sufficiently near the surface of the sands to sustain vegetable life, and even promote luxuriant growth in suitable plants. He examined the under soil of a district in the neighborhood, which was already clothed with a dense forest, and whose configuration of surface led him to believe was of dune origin, and, finding it almost pure silicious sand, his suspicions being confirmed, he argued, and correctly too, that the same vegetation would thrive on the then shifting dunes if the action of the winds on the surface sands could be stayed for a sufficient time to allow young plants to become well rooted. He also studied the behavior and disposition of sand when opposed in its progress by obstacles of various descriptions, and determined the proper character of hedges or fences which should be used to stay its progress.

Thus fortified, in the year above mentioned, the "Great Engineer," as the chronicler repeatedly calls him, made the first plantations along the shore of the gulf in the neighborhood of the old forest of La Teste.

The work was carried on at intervals until 1793, when it was abandoned for want of funds.

In 1795 a committee of citizens, appointed by the Directorate of the department of Gironde, made an examination of these plantations and reported upon their condition in the following terms:

"There exists at present no further doubt about the complete
"success of the reclamation of the downs; one cannot without as-
"tonishment behold the beauty and the vigor of the vegetation in
"these plantations. We find there a great number of pines. 7
"years old, that are from 18 to 20 feet high; willow plants, 4
"years old, grown from cuttings or slips, which have this year
"thrown out shoots 9 feet long, not counting the growth which

"they will yet make before the fall of their leaves; young oaks, "arbutus, furze, etc., all growing as vigorously as in the best soil "of the Republic."

In a report presented to the administration of the Department of the Gironde in 1790, Bremontier gave at length his plans for prosecuting the reclamation of the downs, proposing various methods for arresting the drift of the sands for the first three years, which time it was supposed would be sufficient for the plants to develop. His schemes were all, in the main, successfnl, so that the inhabitants of the district he so greatly benefited afterwards erected a monument to his memory near the site of the original plantations. Subsequently the great work was taken up again and has been prosecuted steadily but slowly, until more than 232,000 of the 300,000 acres are now under cultivation.

Further investigation and continued experiment under the various engineers in charge of the downs have from time to time suggested modifications of Bremontier's plans, but his fundamental ideas are still embodied in them all. Thus M. Goury demonstrated the fact that upon the highest inland dunes, where the texture of the sand was finest, from the greater mobility of such small particles enabling them to outstrip their coarser companions in the race before the winds—perpetual moisture was present at a depth of four inches under the surface, while near the shore, on the lower dunes, and in the valleys, where the sand was coarser, and owing to its consequent diminished capillary power, the line of moisture was a foot below it. It was thus found feasible to adopt a less expensive character of shelter on these high dunes and a great saving was effected.

DOWNS OF DENMARK.

Nearly the entire seaboard of Schleswig-Holstein and the western coast of Denmark is covered with what was a few years ago drifting sand. The "sand-sedge" (mat grass) has effected the reclamation of over two-thirds of the one hundred and ninety thousand acres which this drift is estimated to contain, and forests of trees are now becoming prominent features where but a few years ago the sands advanced unchecked.

DOWNS OF PRUSSIA.

A great portion of the Baltic coast of Prussia is covered by dune sands. This formation, which is called the Pomeranian downs, after the seaboard province of that name, although of comparatively recent origin, embraces an area of more than fifty thousand acres. The works carried on for its reclamation were very poorly conducted for many years, and resulted in repeated failures. Under the direction of a systematized management, however, their convertion into forests of fir and birch trees, and grass covered meadows, has been most successfully carried on for the past seventy years.

DOWNS OF HOLLAND.

Nearly the entire length of the seaboard of the Netherlands is a sand formation, which attains a width, in some instances, of five miles. These downs are regarded as a blessing to the country, since they act as natural ramparts against the terrible storm floods which sometimes set upon the coast from the sea, thus protecting the lower lands from inundation. By proper management they have been made, as elsewhere explained, in some instances, to answer the purpose of the very costly artificial dykes, for which that country is noted, and in many other cases they have greatly facilitated the construction of these latter. The Holland downs are estimated to cover an area of one hundred and forty thousand acres, of which over one hundred thousand acres are held by plantations of the "Helm" (mat grass) and "Longstraw" (lyme grass). The rearing of trees upon these downs has but lately been commenced to any great extent, yet the larch, willow, pine and fir are found upon several tracts of many acres in extent.

SANDS OF GREAT BRITAIN.

There is no estimate of the extent of down formation on the coast of Great Britain, but there are reliable statistics of the reclamation of several tracts of drifting sands, amounting to some thousands of acres, by the use of the "Marum" (mat grass) and "Bent" grass herein described.

THE SAN FRANCISCO SAND DOWNS.

Compared with these great European sand wastes, the San Francisco downs seem insignificant indeed. Covering an area of only 3,000 acres, they are exceeded seventeen times by those of Prussia; they are as 1 to 47 to the Polders of Holland, the Klittens of Denmark are 63 times as large, while the Landes of France cover an area 100 times their extent.

The San Francisco sands resemble those of France very closely ; their component parts being principally silicious particles much rolled and rounded, with iron, a small percentage of mica and calcareous fragments—the latter the debris of shells—the residue being for the most part soluble earthy matter, in which latter constituent they are richer than those of any of the great deposits of Europe, of which a record is at hand.

The rate of advance of these sands, determined by a comparison of their present limit with those fixed by survey at periods 18, 7 and 4 years ago, respectively, has been 39 feet per year from 1855 to 1866 ; 42 feet per year from 1866 to 1870 ; and 45½ feet per year from 1870 to and including 1873. The increase in this rate of late years is probably not due to any augmentation of the amount of sand brought upon the beach, but to the fact that as the dunes advance up the slope of the peninsula their sands spread over its surface in a thinner layer, and, as a given quantity of sand is blown forward each year, it covers the greater width of firm earth from the fact of its being to a less depth.

OBSERVATIONS UPON THE SAN FRANCISCO DOWNS.

A study of the details of the several reclamations alluded to, and an investigation of the circumstances under which each had been prosecuted, made the necessity of attention to the characteristics presented in this case more apparent, and served to point out the advisability of scrutinizing the material provided by nature which might be made available upon the work here contemplated. Such a study was made, and, it need hardly be said, with encouraging results. For instance, it was found that : 1. Most of the phenomena of the development of, and conditions in, sand down formations which had entered as important factors in the arrangement of the details of reclamations elsewhere, were found to exist in a more or less marked degree upon the San Francisco downs, with other circumstances apparently peculiar to this latter locality. 2. The sands of the San Francisco downs closely resemble, in composition, those of the Gulf of Gascony, in France, and are markedly different from those in Holland and Denmark. 3. The line of permanent moisture in the San Francisco downs, although at a lower level than is recorded of this phenomenon in the European sand formations, rises closer to the surface wherever a covering of vegetation is effected. 4. Climatic conditions, likely to exert an important bearing upon the development of vegetation on the sands, are very different from those of any of the European countries mentioned as the scenes of similar works. With some of the characteristics of the climate of Southern England, and a similarity in other features to that of France, the San Francisco climate embodies the long drought of summer and the substitution of a rainy season for a frozen winter, which establishes a near resemblance to a portion of Australia, yet still exempt from the great heat of the latter country. 5. The natural vegetation upon and in the neighborhood of those downs established the fact of the fertility of the sands composing them, and a closer examination of this vegetation seemed to indicate a direct provision of nature for their reclamation. Thus, it was noticed that, wherever the drifting of the sand was checked for a short period, a spontaneous growth of natural herbage made its appearance. And, again, along the edges of the downs whenever certain of these plants became partially covered, by the advancing sands, they appeared to freshen up with remarkably vigorous and healthy appearance, spreading over the drift and battling with it until overwhelmed.

It was therefore to be concluded that : 1. The engineering appliances used elsewhere for the management of drifting sands would be equally efficient here, but that their use would be regulated by the character of the material at hand. 2. The plants proven to be adapted to sand down culture in France would be more applicable to the main portion of the San Francisco work than others which had produced equally good results in Holland, Denmark or Prussia ; while those recommended for such use in Australia were likely to be of still greater adaptability here. 3. Whatever final benefits might reasonably be expected from the cultivation of foreign vegetation, no better results could be attained in the primary matter of stopping the drift than those probably to be afforded by the use of native plants ; and, furthermore, that the growth of some of these seemed to be such as to warrant expectations of the most complete success.

It was also ascertained that these means were not altogether untried—that under the direction of an enterprising owner of a portion of this sand drift the problem had been in a measure solved.

EXPERIMENTS AT GOLDEN GATE PARK.

To demonstrate, on an appreciable scale, that the sand downs could be held, and covered with vegetation, however homely, by these most simple and economical means, without going into any more extended line of experiments, involving future outlay for maintenance, the means for which it was not certain would be at command, now seemed to be the most expedient course. Accordingly in December, 1872, and January, 1873, a trial plantation was made.

Considering the immediate object, as above stated, of this experiment, choice was made of the stronger growing of the native plants—namely, two members of the Lupin~~e~~ family, (*Lupinus arboreus* and *Lupinus albifrons**) although there are others likely to produce more acceptable landscape effects. The yellow lupine of this climate is a hardy, perennial, half shrubbery plant, attaining a height of four or five feet, and covering an area equivalent to that of a circle 6 or 8 feet in diameter. It lives to be 3 or 4 years old, bearing seeds abundantly after the first year. The blue lupine is a much smaller plant · seldom attaining more than half the dimensions above mentioned. It dies at the end of its second or third year, having produced but few seeds. These are tap rooted plants, and to be classed, in this respect, with those used by Bremontier in France.

The circumstance that, in making heavy cuttings through old sand formations in the Park, their roots were, in several instances, traced to depths exceeding 25 feet, the bushes themselves not being over three feet high, constituted the strongest proof that these plants would be suitable for cultivation on the downs ; which, with the fact of their remarkably rapid germination and growth from seed, and the facility with which the seeds could be gathered made up a good recommendation of them as sand-heath plants.

Several members of the Lupin~~e~~ family, *Lupinus albus* particularly, have been extensively grown in Germany and France, where their tops, when young, are used for cattle fodder, and their seed fed to poultry. They have also been cultivated on poor, sandy soils to be turned under as green manure ; but never before used for the purpose of reclaiming drifting sea sands in the way here applied.

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* Bolander.

Tap rooted plants, to be extensively employed in sand reclamation, must be propagated upon the downs themselves from seed; their success depending upon the progress of the leading root which penetrates far into the sand before the top much more than shows itself. Lupine seed, therefore, was gathered and sown. For the reason above given, also, all plants, which succeed upon loose sands, develop very slowly at first, while they are becoming well rooted; which fact had been the cause of the failure of early attempts at reclamation in Europe, the young plants being overwhelmed by the drift before they were large enough to hold the sands; and to prevent this was the object of the protective measures, before alluded to, which were afterwards adopted, constituting a large share of the expense of reclamation in that country. Thus it would probably take the young lupine two months to develop from seed sufficiently to protect itself; so it was imperative that it be, in the meanwhile, shielded. Common barley, which sprouts from the seed on the fifth day and attains a height sufficient to hold the drift on the twelfth day after planting, was sown with the lupine for this purpose. In order to still further test undecided points involved in this reclamation problem, some seeds of the *Acacia lophantha* (which tree had been recommended for the purpose) and of the Maritime pine (the tree so successfully employed in France) were sown at the same time.

The result has been: The barley, as was expected, protected the lupine while very young and effectually prevented all drift of the planted ground throughout the storms of winter and spring. The lupine has covered the surface of the plantation with a nearly dense vegetation, 2 or 3 feet high, in a single year. The acacia seed produced fine young plants, a few of which have lived through the Summer, but most all were killed by a succession of remarkably heavy frosts, which occurred some time after they came up. The pine seed, not being very fresh, did not produce more than half the plants which it should have produced. Of these, many were burned by the heat of the sun, and others suffered from proximity to the lupine which, being a greedy plant, deprived them of sustenance; so that but few have lived throughout the summer, but these are now doing well.

This experiment, with further observation and research, affords data upon which to base conclusions as to adaptability to cultivation here, of the various plants mentioned in the annexed list, as set forth under each title, but the chief results are as follows:

The San Francisco downs can be covered with a shrubby vegetation, resembling that upon the older sand hills of the neighborhood, in which the lupines are prominent features, without fail, at a very small expense, and in a period of less than two years.

The hills may then be converted into forests of thriving young trees, conifers principally, while the valleys may be covered with grass the year around and grouped with another class of young trees, all of which will grow without irrigation.

PROPOSED WORK OF RECLAMATION.

From the foregoing a programme for the proposed work may be deduced as follows :

1. The erection of a coast dune, or bulkhead of sand, as it were, after the fashion of some of the Holland dykes and similar works in other European countries, by causing the sand which is brought upon the beach by the waves, to be piled up by the winds (as described under the head of the "Great Highway.") The bulkhead to be consolidated by means of the grasses indicated in the appended list, as suitable to the purpose, and finally improved further, as illustrated under the same heading.

2. The reclamation of the drifting sands by the native vegetation, with such of the imported as may prove suitable.

3. The plantation of the dunes with seeds and plants of trees, as enumerated in the list.

RESULTS WHICH MAY BE ANTICIPATED.

It may reasonably be anticipated that the following recited ends will be attained :

1. The stoppage of all advance of sand inland from the beach during the second year of the work.

2. The conversion of the downs into heaths covered with native vegetation, during the first year of the work.

3. Their presenting the general appearance of a young forest of evergreens at the end of the sixth year; which, affording shelter and shade with quite a variety of foliage in its several exposures, and open glades in the valleys, will have a decided park-like aspect, about the twelfth year after the commencement of the work. After the first year, the portion of this district within the Park

may be rendered pleasurable to the public by the construction of drives and rides, which, from the peculiar features of topography traversed, will be especially attractive.

COST OF RECLAMATION.

The cost of sowing and maintaining the young forests of the French downs, exclusive of the works of protection at the beach, was, during the first years of reclamation, about $13.50 per acre. Of late years, owing to the advance in price of good seed and of labor, the cost has been about $20 per acre. The cost of planting the grass upon the beach was about $11 per acre, and is now estimated at $14 per acre.

The cost of reclamation by the use of grasses, in Denmark, has ranged from $10 to $15 per acre; and in Holland the expense has been somewhat less, for the plantations.

The cost of erecting and maintaining protective dunes, or dykes, varies greatly as the degree of exposure to which the work is to be subjected, and the situation of the land to be protected (whether above or below flood-tide level), necessitates a greater or less expensive character of engineering work. In Holland these embankments are very substantial—being generally built and protected by artificial means, and only overgrown by grasses planted after their erection; but on the sandy shores of France, Denmark, and Prussia, they have been raised and held by the natural means before alluded to, covered and consolidated by suitable grasses, at an expense ranging from 30 to 70 cents per linear foot.

The cost of reclamation of the San Francisco downs with lupine will be less than $20 per acre. The subsequent sowing and protection of tree-seeds will amount to $25 per acre. The cultivation of the principal grasses will cost, from seed, $15 per acre; by transplanting, $35 per acre.

There is within the Golden Gate Park 500 acres of sand dunes, upon which the lupine should be sown—500 acres at $20	$10,000 00
Upon 300, of this 500 acres, tree-seeds should afterwards be sown—300 acres at $25	7,500 00
Upon 100, of this 500 acres, grass-seeds should afterwards be sown—100 acres at $15	1,500 00

There are, in addition to the above-mentioned 500 acres, 150 acres of sand dunes, in Golden Gate Park, upon which grass-plants should be set out—150 acres at $35	5,250 00
Upon 50, of these 150 acres, tree-seeds should afterwards be sown, but not ploughed in or covered with brush, as in the lupine plantation—50 acres at $10........	500 00
Upon 50, of these 150 acres, young trees and cuttings should be planted, which will cost $50 per acre.......	2,500 00
Besides which, there are about 50 acres in the valleys of the downs, within the park, which should be re-sown with other kinds of grass-seed (after the plants for reclamation have been raised in them and taken out), and planted with cuttings and young plants of suitable trees, which will probably cost $70 per acre—50 acres at $70	3,500 00
	$30,750 00

Total cost of reclaiming so much of the sand-drift as is within the Golden Gate Park (700 acres), and starting young trees, shrubs, and grasses upon it, will be then $30,750, or $43.93 per acre.

The above prices are established upon estimates made with the knowledge of the cost of the requisite material, at the present date, of the actual cost of most of the work (at current prices), and of the nature of all the labor to be performed, and it is quite certain that they are sufficiently high to cover all reasonable contingencies.

CAUSE OF THE APPARENT FERTILITY OF SAND DOWNS.

When the fact of the large number and length of roots, which all plants adapted to sand-down reclamation throw out in such soil, is considered, the rapidity and strength of their development no longer remains unaccounted for. The explanation is found in the great extent of matter from which they are thus enabled to draw their sustenance, and in the capacity for holding water, and warmth of the sands themselves. Thus, although a given volume of dune-sand may not contain more than one-fifth of the chemical elements, necessary for the growth of a plant, which an equal extent of firm forest-land does, the roots of plants propagated upon the loose soil, will probably extend through ten times the bulk of material which can be penetrated by those upon the comparatively fertile, but more compact, formation. Regarding then the actual relative fertility of soils, their capacity for holding water, and retaining heat, a simple calculation is only necessary to demonstrate the superior qualifications of deep dune-sand formations, over some soils generally thought to be much more productive, for sustaining a high degree of vegetable growth, provided such plants be selected for cultivation as are suitable in each case. A most striking instance of this is presented in the growth of the Pine used in the reclamation of the French sand downs. The average growth of this tree is twenty-five feet in the first ten years from seed on the downs, and but seventeen feet during a similar period on the firm hill-land. On the sands it reaches an elevation of ninety feet; on firmer soil, it has rarely been known to exceed sixty feet.

Another remarkable instance of this great growth is that of a sand willow in the San Francisco downs, whose roots were traced over one hundred and twenty feet from the parent plant—one of which roots, measuring ninety-four feet in length, being now in this office.

In concluding this subject, I respectfully reiterate the terms in which it was spoken of in the last biennial report—under date of December 30th, 1871—which I had the honor of submitting:

"It will be necessary to devise some means, also, for stopping the encroachment of the sand from the sea-beach. In order to successfully accomplish these ends, the entire area of sand-drift must be taken in hand at the same time—thus necessitating the co-operation of the owners of adjoining property with the management of the park."

PLANTS ADAPTED TO SAND-DOWN RECLAMATION.

The subjoined list of plants, with the remarks connected therewith, is simply a compilation of memoranda, which might be of use to those who may hereafter prosecute the works of reclamation. It is by no means exhaustive of the subject, though longer than it was intended to be. The plants spoken of are those of whose efficacy in the departments of the work for which they are recommended, there is ample precedent—which is the case with those spoken of as having been used in Europe—or concerning whose adaptability to the purpose there is high scientific authority—which may be said of those spoken of as having been recommended for plantation on the sands of Australia.

In the plantation of sand-downs, the primary object to be attained is the holding of the surface and prevention of drift for the first three months, during which time the real sand-plants develop and become firmly rooted. This object has been effected in Europe by means of coverings of brush-wood, protective palisades, and fences.

Common barley, sprouting from seed sown broadcast, answered the same purpose in the experiments made at Golden Gate Park, and it is probable that buckwheat and chiccory, plants adapted to cultivation in light sandy soil, and sprouting rapidly from seed, will answer this temporary purpose equally well.

There are few, if any, plants hitherto used upon sand reclamation which develop rapidly enough on dry dunes, to take the place of the annuals above mentioned, when they begin to fade, and it is this purpose which the lupine answers so well—effectually stopping all drift, and producing by its rapid growth the material for future works of protection which the seedling trees require.

TREES.

Maritime Pine—*Pinus Maritima*—Sometimes called the French Pine or Sea-Side Pine—The tree so extensively and successfully used in reclaiming sand-downs in France.—It is grown from seed on the sands; the young plants develop very slowly for the first two years—they then grow faster each succeeding season, and attain, upon the French-coast downs, a height of twelve feet when six years old, twenty-five feet when ten yesrs old, and a maximum elevation of ninety feet.

The seedling plants must be protected from drifting sand and heat of the sun, and the sand about them kept moist by being shaded with brush-wood or growth of some vegetation.

This pine is adapted to cultivation upon the greater part of the San Francisco downs, including the highest and most arid portions. The seed should be sown in wide rows or belts through the lupine plantation, when these latter plants are one year old, and the portions thus sown in pine should be covered with the lupine bushes which shall have been removed from them.

Cluster Pine—*Pinus pinaster.*—A native of the sandy shores of the Mediterranean, where it is a natural reclaimer of drifting downs. This tree is frequently confounded with the Maritime Pine, and good authorities differ upon the subject. It is cultivated upon the downs of France and other portions of Southern Europe, where its treatment, rate of development and growth is very much the same as the Maritime Pine; but it does not attain so great a height.

It is one of the trees best adapted for the work of reclaiming the San Francisco downs. It should be cultivated like the Maritime Pine, as, indeed, should all trees which are raised from the seed on the sands themselves.

Scotch Fir—*Pinus sylvestris.*—Cultivated successfully upon the Prussian and other northern sand-downs, from seed, and also by setting out young trees. Better suited to cold climates than either *Pinus maritima* or *Pinus pinaster.*

Although a native of northern latitudes and grown generally in moist climates, it has been successfully introduced upon the dryest sandy wastes of Australia, and is highly recommended for planting on sand-downs in that country.

It will probably succeed on the more exposed and moist localities of the San Francisco downs.

Larch—*Pinus larix.*—Recently used most successfully upon European downs, particularly in reclaiming those of France and Prussia.

It may be a most valuable tree for the foresting of the San Francisco downs.

Tamarisk—*Tamarix.*—A family of beautiful small trees and shrubs of which the French species, *Tamarix gallica,* and the German, *Tamarix germanica,* have been extensively used in sand-down plantation, and on sea-side exposures, in the southern part of Europe and England. These plants stand the sea winds and salt air better than any other shrub or tree. They are readily propagated from cuttings, upon the moist places in the downs themselves. The Arabian Tamarix, *T. orientalis,* is found growing in the sands of the desert where no other vegetation exists; and the African variety, which is but a shrub six or seven feet high, is a native of the sandy shores of the Mediterranean. All of these plants, particularly the two first mentioned, are adapted to cultivation upon the San Francisco downs.

Japan Varnish Tree—*Ailanthus glandulosa.*—A tree of most rapid growth in sand. But recently come into notice for purposes of reclamation, in Europe, and proven itself one of the best for the purpose.

May not thrive in the more exposed places, but will, no doubt, succeed well in the valleys of the San Francisco downs.

Common Alder—*Alnus glandulosa.* Northern Alder—*Alnus incana.*—Cultivated in valleys of the downs in Prussia.
May be adapted to moist valleys of San Francisco downs.

Sea-Side Willow—*Salix argentea.*—Much used in the construction of shore dunes, in France. And will answer a similar purpose here.

Sand Willow—*Salix arenaria.*—One of the best trees for sand reclamation in localities where much moisture exists.

It does not suffer from being nearly covered with drifting sand, but throws out new roots from every joint covered, and seemingly thrives the better from being in the drift.

This tree has been used to a great extent upon sand-downs throughout Europe.

Coast Sheoak—*Casuarina quadrivalvis.*—Recommended as one of the most important trees for arresting the ingress of coast sand in Australia, and should be tried here.

Desert Sheoak—*C. glauca.*—Also recommended for sand plantations in Australia, and worthy of trial here.

"Sandstay"—*Leptospermum laevigatum.*—This shrub, or small tree, is the most effectual of all for arresting the progress of drift-sands in Australia, and, consequently, should receive especial attention here. It may be raised from seeds upon the down sand itself, like the pine.

"Sword Sedge"—*Lepidosperma gladiatum.*—One of the most important plants for binding sea sand in Australia.
It should be tried here.

Common Broom—*Spartium scoparium.*—A tall, handsome bush, bearing a profusion of yellow flowers, which grows readily from seed on down-sands. One of the first plants used in France in the works of reclamation, for which purpose it occupies a position in the front rank of the shrubs which have been tried. The broom should take the place of the lupine on the San Francisco downs, when the latter begins to die, at the end of the third year. This plant attains a height of five feet, on the French downs, in four years.

Spanish Broom — *Spartium monospermum.*—A beautiful, large shrub, with sweet-scented, snow-white flowers.

Used successfully in Southern Europe to reclaim drift sands.

Will answer the same purpose here as the common broom, which it much resembles.

Common Furze—*Ulex europaeus*—Called by the French "prickly broom."—A low-growing, coarse shrub. One of the first and most successful sand reclaimers used in France. Will probably succeed well with the lupine here, but is not particularly desirable.

Attains a height of three feet, on French downs, in four years.

There are other trees and shrubs which have been cultivated with a fair degree of success, or recommended by different authorities, for plantation, on shifting coast sands.

Among these, the common elder may be mentioned as enduring the heavy winds remarkably well, and growing luxuriantly in pure sand, if it be sufficiently moist. The Beach Plum, *Prunus maritima;* Common Heath, *Erica communis;* New Zealand Flax, *Phoemium tenax;* several members of the *Genista* (allied to the brooms) family; two California pines, *Pinus insignis* (Monterey Pine), a native of the sea side south of San Francisco, and *Pinus contorta*, a low, close-growing plant found upon the shores of the northern part of the state, should receive attention as secondary trees, likely to thrive in the moist places of these downs. The same may be said of the Monterey cypress, several of the Eucalyptus, and Acacias; but, as these trees have never proven themselves to be adapted to the purpose, and we can only conjecture, from their habit, that they will do well, they should not receive much attention during the primary operations.

GRASSES.

"Mat Grass" } .. { *Psamma arenaria.*
"Sand Reed" } .. { *Arundo arenaria.*

This grass stands at the head of the sand binders, having proven itself to be far superior to all others for the coast plantations on all the great works of reclamation.

Under the names of "Beach Grass," "Sea Grass," "Mat Reed," "Mat Weed," and "Marum" or "Murram," it has been used at many points on the coast of England to reclaim sandy tracts.

It is planted on the shore-dunes of the Prussian sands of the Pomeranian coast, where it is known as the Hügelrohr."

It is the principal agent in the works of reclamation upon the Danish sand-downs, and it is preferred in that country to plantations of trees. The Danes call it "Klittag"—Sand-Sedge.

Nearly all the dykes of Holland are covered with this grass, and much of the drifting sand-waste of that country has been reclaimed by it. It is there known as "Helm" or "Dachgras."

The French call it "Roseau de Sables," and now, also, accord it the precedence for the beach plantations, though the next named grass, *Elymus arenarius*, was at first used by them as the best.

It is a strong and rapid-growing, reedy grass, which throws out its roots horizontally, and rears its leading stalks diagonally upward. It sprouts new roots and new leaf-stalks from each bud covered by the drift, and, thus spreading through the sand; finally binds it by a perfect net-work of vegetation. So far from being injured, it is seemingly refreshed by a shower of drift-sand, and dies out when complete reclamation has been attained and other plants take its place.

It should be raised from seed in the moist valleys and near the beach of the San Francisco downs, whence the roots, plants, and cuttings may be transplanted to the beach, for the purpose of erecting and maintaining a shore dune, as elsewhere described, and to any other portion of the drift where desirable. Its growth from seed on the dry dunes is too slow during the first year, to allow of its being raised in this way where it will be subject to much drift; and therefore it could not be depended on here to take the place of the lupine. Though it will no doubt prove to be the best plant for use near the beach.

Sea Lyme Grass—*Elymus arenarius.*—A strong, rough, glaucous grass, standing next, in order of efficiency for sand reclamation purposes, to the Mat grass.

It has been employed successfully in the maintenance of shore dunes in France, where it was brought into notice under the name of "Gourbet," some years after the first reclamation was effected with the pine, and this tree was proven not to thrive when planted immediately upon, or near the beach.

The Hollanders were probably the first to make use of this valuable grass in the construction of sea-beach works. The fascines of straw with which their protective dykes are often faced and, in a measure, built up, are bundles of the stalks and leaves of this grass which attain a length of four or five feet, from which characteristic the Dutch name for it signifies "Long straw." It has been used to a great extent on the Holland downs and sea-dykes, and, although it is not as effectual a reclaimer as the Mat grass, it is sometimes preferred to it, for the reason that its straw is useful for many domestic purposes.

The Lyme grass is not plentiful on the Denmark sands, where it is found only in limited localities, close to the salt water, and is hence called "Sea-weed." It has been used in reclamation on the Baltic downs of Prussia, where it is called the "Sand-hair grass," and is esteemed above the Mat-reed for inland plantations. It has been used very successfully in England, where it is mixed with the "Bent grass," next described, and is sometimes called the "Reedy bent," although of a different family.

This plant thrives best when receiving fresh supplies of drift-sand over it occasionally, but, throwing out its shoots more nearly horizontal than the Mat-grass, does not grow through the sand and cover it as quickly or effectually as the latter.

It would thrive better on the higher portions of the San Francisco dunes than any other grass, where it may be grown from the seed; but the safer plan will be to propagate and use it in the same manner as prescribed for the Mat-grass.

Bent Grass—*Agrostis.* — There are two varieties of this grass adapted to cultivation on very loose sandy soils—the "Common Bent Grass"—*Agrostis vulgaris*—and the "Fiorine Bent Grass"—*Agrostis stolonifera;* each possessing the characteristic of spreading over a great extent of surface by means of their long runners, which root afresh at the joints, and interweaving with each other, form a carpet over the ground, which makes them useful upon light soils. These grasses do not stand being covered by drift like the mat grass and lyme grass, and hence, not having their roots deeply set, are not adapted to the primary purposes of reclamation. They have been used successfully upon such works in England and Ireland, where showers of rain fall at short intervals throughout the year, but have not received any attention as reclaimers on the continent of Europe. They will be amongst the best grasses for cultivation in the valleys of San Francisco dunes after the reclamation has been effected.

" Couch grass—*Triticum.*—There are two varieties of this grass adapted to sandy soils—the "Common Couch"—*Triticum repens*—and the "Sand Couch grass,"—*Triticum junceum*—of which the latter has been used to some extent on works of reclamation in England. Their habit is much like that of the Bent grass, and their long white stalks are known to extend under the surface of loose soils for many feet. These grasses are well adapted for plantation upon the San Francisco downs, after the reclamation has been effected.

There are several other varieties of grass whose habit of growth and adaptability to cultivation in poor soils, under a dry climate, make them desirable for plantation on the San Francisco downs, after the reclamation has been effected, to some extent. Among these may be mentioned the "Dogtooth grass"—*Cynodon dactylon*—the "Creeping Fescue grass"—*Festuca rubra*—and the "Sinew grass"—*Carex arenaria*—as well as a variety recently introduced into California under the name of Sandwich Island grass.

THE GREAT HIGHWAY.

The Great Highway is a strip of land from 200 to 400 feet in width, above ordinary high water mark, extending from the Cliff House bluff southerly along the ocean beach, for a distance of about two and seven-eighths miles.

As before stated, the arresting of the sands at the beach, and ultimate entire stoppage of the supply brought on shore by the waves, is the most important, and should be the first step in the work of reclamation.

So that the management of this highway constitutes the key to all success upon the downs. Each billow that breaks upon this gently sloping shore, forces a quantity of sand before it by the blow, stirs up and carries forward, suspended in its foaming fragments, still more of the same material, all of which, as wave after wave dashes on, is finally deposited just at the limit of the highest running breaker of the flood.

Along this line a considerable increase in the slope of the beach may be seen, just above which a slight ridge, less than a foot in height, and varying in width from ten to twenty feet, is readily observed, and recognized as the installment of sands brought up by each ordinarily high tide, while the amounts thus left after storm floods are still more extensive. The sands of this ridge are being continually dried and carried inward by the winds, while their place is as constantly filled by the fresh material brought forward by the waves. w

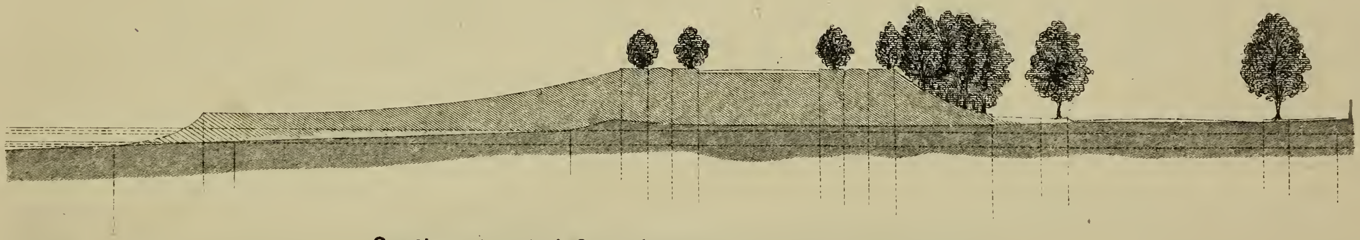
Observations made, and experiments conducted upon the sands, at Golden Gate Park during the past year, indicate that about 800 cubic feet of sand to each linear foot of beach is thus contributed to the San Francisco downs every year. This amount exceeds that brought upon any of the European shores by about two hundred per centum, and being ascertained by only one season's experiment, may prove to be exceptional; though probably not far from the correct figure, in the present state of the beach.

The transportation of finely divided material, such as sand, by running water, and the degree of inclination in a bottom line up which it may be forced and deposited by an advancing wave, are problems solved by known rules—based upon experiment, observation, and practical experience, in engineering work. The familiar circumstance that sands are thrown up by the waves in great quantities upon wide, flat beaches, to a limited extent upon steeper shores, and scarcely at all on a beach at the foot of a bluff to which high tide reaches, is sufficient demonstration of this fact for present purposes.

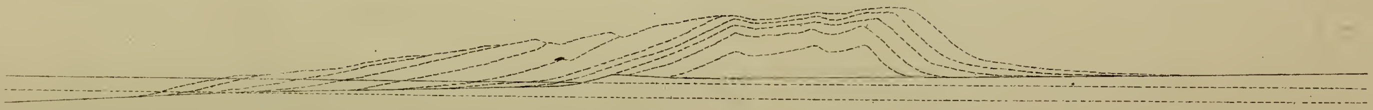
Thus, a flat sea beach being given, by artificial means, a slope from a point several feet below low water line to and above high water level, of such inclination that the waves cannot force sand up it, and upon which the material deposited by the water will not lodge, the end will have been accomplished—the advance of the sand stopped—for the water of each wave will carry back in the undertow that which it brought up in suspension. This rule applies to such beaches as the one reserved here for a great highway, but not to coasts like some to be found in Europe, where the very fine sands move and form banks under water, which, continually shifting, sometimes move upon the shore line in a manner similar to the advance of the great ridges in the upland downs.

The rearing of dunes and their progress before the winds are matters to which much attention has been given where works of reclamation have been contemplated, so that the laws of their formation are well established, and we are enabled to predict the size and shape of, and the position in which a hillock will be raised by the interposition of various obstructions to the advance of the sands. Should a series of brush hedges or wicker-work fences be erected along a shore line, at such distances from the water as to render the outlying row safe from the run of the highest waves, the sands brought upon the beach would be piled up in a hillock about them,

IMPROVEMENT OF THE GREAT HIGHWAY.



Section, showing final improvment of the shore dune.



Section, showing proposed accumulation of sand on the beach.

and a continued raising of the fences would result in a corresponding elevation of the dune, as more sand was brought up, and a proportionate increase of its seaward slope, until such an angle of inclination were reached that, as before remarked, no more sand would be deposited by the waves. If a belt of plants of the two first mentioned grasses in the list herewith given—the Mat grass and the Lyme grass—be planted at a suitable distance from the water, their leaves and stalks would grow readily through and retain the drift which will be blown over them, new roots will be thrown out and interweave throughout the dune so formed, and the sand will then be bound into a firm ridge—whose slope will gradually advance seaward—and the stopping of all supply of material to the inland downs will have been accomplished.

These two methods of forming protection-dunes have been in use for many years in Europe, having supplanted the more costly artificial works on sandy shores, except at the most exposed places, and where the land to be protected is much below the level of the sea. It is the latter plan, assisted somewhat by the former, by which it is proper to form a bulkhead upon the outer portion of the Great Highway, as shown in section, at A in the adjoined diagram.

With the quantity of sand above given—as brought upon the beach each season—at the end of four years there would be a ridge, equivalent in cross-sectional area to that of a rectangle with 160 feet base and 20 feet perpendicular, reared at an expense of only the cost of brush hedges, grass planting and some care thereof. Upon the top of this embankment a road, overlooking the surf, and flanked by rows of suitable bushes, might be built; its inner slope might in time be covered by a dense growth of trees, in the shelter of which another spacious drive, at a level fifteen feet below that on the bulkhead, could be constructed, with a sidewalk along the line of property on the east, and rows of trees intervening. The seaward slope of the dyke, being of gentle inclination and covered with mat grass, would continue to advance until it arrived at a line where storm-waves would occasionally do it much damage, at this point it should be assisted or protected by artificial means. Thus, at the end of ten or twelve years—the amount of sand brought up by the waves having decreased each year since the commencement of the work, by reason of the continued increase in the slope of the beach—there would be an embankment, erected by the forces of nature, and protected and improved only, by artificial means.

During the interim, the sheltered drive may be built, and used in lieu of the beach, the first year of the work, and the other structures gradually added as required.

Respectfully submitted,

Wm. Hammond Hall,
Engineer.

APPENDIX B.

REPORT OF THE SUPERINTENDENT UPON THE PRESENT STATE OF PARK IMPROVEMENT.

Office of the Engineer to the
Park Commission.
San Francisco, November 30th, 1873.

To the Honorable Board of Park Commissioners,
San Francisco:

Gentlemen—

I have the honor to submit this Report concerning the grounds you have placed in my charge—embodying a resumé of the works which have been prosecuted for their development, and maintenance during the twenty-three months which have passed since my last general communication, and ending with this date, a statement of the present condition of the Park improvement, with an account of the government and use of the parks.

CHARACTER OF WORK PERFORMED.

The fact that the initiatory works, necessary in the improvement of an extended park, are in a great measure such as are only calculated to prepare the way for the manipulations which result in park-like effect, must not be overlooked in contemplating the measures carried out or commenced at Golden Gate Park. Though nature does produce localities shaped and planted with seeming purpose of providing opportunity for repose and enjoyment to the wayfarer, it has seldom been the lot of any modern city to become possessed of such a site for use as a park. San Francisco certainly has not been thus fortunate; but like the great metropolis of the Atlantic seaboard, obtained a tract which, though possessed of moderate advantages, has demanded some heavy work to produce even the breadth of effect desirable in her climate. Much of the work performed, therefore, has been of a preliminary character, made necessary by the several circumstances hereinafter mentioned.

FORCE EMPLOYED.

The organization of the force in your employ has been kept as simple as ordinary efficiency would admit of.

The park keeper has acted as general foreman of all work, kept the journal of proceedings, and acted as assistant engineer in surveying operations.

The head gardener has had exclusive management of the details of the horticultural works.

The foreman of teams has been entrusted with the direction of the stable, and much of the road construction.

Four assistant keepers, who act as gate keepers and police, have been employed.

One carpenter has been retained constantly. Assistant foremen, mechanics and skilled laborers have been employed by the day, as occasion required.

The number of employees has varied from thirty men (including all) and nine horses—the minimum used in summer—to 220 men and 50 teams—the maximum force employed when the work was being pushed forward in May, 1872.

OBJECT OF THE WORKS EXECUTED.

In projecting the work at the park, it has been a primary object to preserve the main features of topography intact; and the ultimate effects of the works executed, with those yet to be carried out, will be to render more prominent and imposing all that is beautiful or striking in the natural lay of the land. The necessity for, and circumstances of, the various works are recounted under the several appropriate headings, and it is only necessary here to state that the cases where a seeming departure from good taste is apparent in the shaping of the grounds, are the result of a temporary arrangement of such surface, made necessary by the lack of means to carry the work to a proper termination.

PRESENT CONDITION OF PARK IMPROVEMENT.

EARTHWORK.

The earthwork executed at Golden Gate Park may be ranked under three headings: grading, sub-covering plats with clay, and top-dressing plats with soil.

Grading.—Most of this class of work was made necessary in bringing the avenue approximately to the official grades of the adjoining streets, in raising portions of the park to grades admitting of drainage, and in carrying the roads through the peculiarly elongated ridges which form prominent features of the topography of the reservation; and, being planned to balance, cut and fill, and systematically performed, has cost but little. About 485,516 cubic yards of cutting and filling under this heading have been executed, the chief of which being: grading and shaping the Avenue, 296,766 cubic yards; grading the Lawn Valley, 38,300 cub. yds.; grading roads in the park, 107,950 cub. yds.; grading the nursery and stable yard valley, 19,000 cub. yds.; and the remaining 22,500 cubic yards distributed amongst many minor jobs, such as filling unsightly sink holes, and shaping portions of the grounds adjacent to the works above enumerated.

This grading comprises more than half of that of similar nature, necessary in carrying out the plans for the East Park and Avenue, but it also embraces the heavier jobs of earthwork, whose execution is less expensive per cubic yard than much of that remaining to be done, which latter is mainly embraced in the shaping and formation of lakes, terraces, walks, and grounds immediately around the principal architectural features.

Sub-Covering.—In order to successfully cultivate any vegetation which depends upon surface moisture, over a subsoil so very pervious as much of that on the park reservation, it is necessary to lay a sub-covering of a retentive clay under the dressing of soil in which the roots are to find sustenance. This covering, being partially mixed with the lighter soil below and the richer soil above, seems to effect the end in a satisfactory manner. About 13,000 cubic yards of clay has thus been used; principally upon the beds in the Avenue, the new nursery plat, the Lawn valley, and various limited spaces adjacent to the line of road constructed. Except that used upon the avenue (which was obtained without the reservation, as being more convenient), this material has been taken from the cuts made in reducing other portions of the ground to the grades desired.

Top-dressing.—There is not any soil to be found upon the Golden Gate Park reservation suitable as a top-dressing for plant beds or lawn plats. An almost inexhaustable supply may be had, however, upon the hills, about one-third of a mile southeast of the present nursery site. From this source, by the permission of the owner of a tract there situate, about 1,410 cubic yards of heavy loam have been hauled upon the park, and used as the top-dressing upon the nursery plat and several small beds adjacent to the proposed lawn and the entrance drive; besides which, about 1,300 cubic yards of the same material have been used in preparing compost, in which to plant trees and shrubs.

ROAD BUILDING.

The grading necessary to prepare the way for this class of work, is noticed under the head of Earthwork.

Very little choice has been possible in the selection of material for surfacing the park drives; the only available metal being the several grades of red, blue and gray serpentine of the neighborhood, of which there are two quarries now open upon the reservation. This rock has been broken after the MacAdam plan, laid led upon the ~~broken~~ road bed to a depth of from ten to fourteen inches, watered profusely, and rolled with a roller weighing 10,500 pounds. The drive thus built presents a remarkably smooth and elastic surface, which requires great care, however, for its preservation, in the way of watering and dressing. Moreover, the material used is of extremely variable quality in the quarry, necessitating much attention to the proper admixture of the several grades used in the work, in order to insure its success. The experience of the past will greatly facilitate the manipulation of this branch of work in the future.

There are 20,980 linear feet of roadway, from 32 to 90 feet in width, ballasted and surfaced, in the Avenue and Park; comprising an area equivalent to 991,033 square feet; which, with 3,100 feet of surfaced walks, 14 feet wide—or 45,400 square feet—and 11,200 square feet of similar work upon the stable yard, makes a total of 1,047,633 square feet of macadamizing completed. These items constitute about two-thirds of the roadway designed for the East Park, or one-fourth of that contemplated for the entire reservation;

and about one-fifteenth part of the walks planned for the portion of the Park to be treated as a finished pleasure ground.

DRAINAGE.

However pervious the soil and sub-soil of a tract naturally, though the necessity for agricultural drainage be entirely done away with thereby, when roads and walks of compact material are constructed, and lawn-plats or beds are covered with the needed layers of heavy earth, the necessity for adequate surface drainage, with sub-drains to relieve these side gutters, and main drains to conduct away the accumulated waters to suitable outfalls or reservoirs, immediately becomes apparent.

It has been impossible, owing to the absence of the proposed outlet sewers or main drains of the district of which the Park forms a part, to the want of a thoroughly digested plan of improvement at the commencement of the work, but most of all to the lack of means for its proper prosecution, to lay many of the drains, which have been needed, in their permanent locations. In several instances it has been necessary to drain, temporarily, in a direction contrary to that which would have been taken could the entire system of drainage works been properly executed from the commencement.

All the roadways and walks in the Park should have a gutter and curb of rough stone on each side, with sink holes and ~~slit~~ basins at proper intervals, drained by suitable earthenware pipes into sub-cisterns, whence the water could percolate into the soil, or be carried off in time of heavy rainfall by overflow pipes, into the lakes of the Park or the main drains of the district.

silt

No such provision has been made, chiefly for the reason last given above, and it will have cost several thousand dollars by the time the present season is over, to repair the damage done by the wash of the heavy rains of the two winters to which the roads will then have been subjected.

About 750 linear feet of 3 x 5 feet, framed redwood sewer box, made necessary by the grading of the Avenue and Baker Street; 5,998 linear feet of 8 x 10 inch, redwood box drain; and 2,830 linear feet of built rock drain, (on clay formation) have been placed in the Avenue and Park. These drains have been laid in the cheapest manner, and only as extreme necessity demanded their construction. For the reasons above given, about one-third of the entire length of drain laid out, as now placed, will not enter into the permanent plan of works; the remaining two-thirds may be utilized temporarily in this system until the material of which it is composed becomes decayed, when it may be supplemented by the proper pipe.

No more forcible argument of the bad policy of over-economy in appropriating means for park improvement can be cited, than this notice of the disadvantage to which the work of drainage, alone, has been carried on at Golden Gate Park.

WATER WORKS.

Though the Geological formation of the San Francisco peninsula, and the elevated topographical position thereon of the Eastern portion of the Park reservation are strong arguments against the probability of obtaining any large supply of water from the sub-strata of that locality; the apparent great sipage, the supplies drawn from several wells in the district, and the favorable result of the experimental well at Golden Gate Park, encourage the hope that, upon a thorough investigation of the subject, a volume may be pumped from portions of the tract which will materially assist in the necessary irrigation and ornamental water works; sufficient, probably, to render the Park management independent, without great embarrassment, of the supply to be derived from without.

Doubtless, however, the great amount of water which will be necessary for the maintenance of any considerable extent of highly finished pleasure ground or ornamental water, must be obtained from some greater source of supply than can be found in the immediate neighborhood of the Park; and it is to be hoped that a definite plan of supply may be settled upon at an early day, for on it depends the arrangement of the system of distributing pipes, becoming more and more necessary each season.

There is now at Golden Gate Park a well capable of yielding 18,000 gallons of water per day, during the dry season; a steam pumping apparatus, capable of raising 2,500 gallons per hour to a verticle height of 120 feet; a tank of 27,000 gallons capacity, upon a frame 24 feet high, giving a pressure of 100 feet head in the Lawn valley; with distributing pipe, water gates and hydrants, as follows:

7,275	feet	4½	inch	wrought iron pipe.
765	"	3	"	iron pipe.
530	"	2½	"	" "
3,681	"	2	"	galvanized iron pipe.
1,812	"	1½	"	" " "
142	"	1½	"	" " "
282	"	1	"	" " "
14,487	"			Total amount of pipe laid.

4	4½	inch water gates.
3	2½ to 3	inch service cocks or globe valves.
10	1½ to 2	“ “ “ “ “ “
57	1¼	inch hose bibbs and hydrants.
12	1	“ “ “ “ “

This system of pipes is laid along the edge of the roadway in the Avenue, and the drives across the eastern end of the Park, throughout the new nursery, to the stable and foreman's residence. It is connected with the main of the Spring Valley Water Company by a 4½ inch pipe, into which the supply is passed through a water meter.

The 4½ inch pipe laid at the Park is similar to much which has been used in collecting, conducting and distributing water by the various water supply and hydraulic mining companies on this coast. It is made of rolled sheet iron, 1-16th of an inch thick, lapped, double riveted, and heavily coated by being dipped into a bath of hot coal tar and asphaltum. Joints are formed by means of a closely fitting collar, and loose sleeve which is packed and set up with a lead joint; and taps are made with cast iron sockets riveted to the pipe, into which a smaller pipe may be screwed.

This pipe is very cheap, but it requires the utmost care in its manufacture and subsequent manipulation. There has been some trouble with that which was laid at the Park; and it certainly does appear that, in a work where a slight failure of a water main would cause great damage, and where a renewal of such details in after years would cause great inconvenience, the true policy would be to adopt the best and most enduring description of distributing pipe, though the first cost be considerable.

AGRICULTURAL WORKS.

A detailed statement of the result of the experiments made upon the sand downs—a principal item under the above heading—has already been made to your Honorable Board.

THE NEW NURSERY.

As more fully explained in a communication heretofore submitted to your Honorable Board, the position for this feature of utility was chosen with special reference to the great measure of protection, warmth, seclusion and convenience which the site afforded. There was not a plat of ground within the reservation whose natural surface presented the characteristics of shape, slope and soil, necessary for its adaptation as a nursery ground. The valley chosen was a succession of hillocks and sink holes, which, being graded off to a mean level, opened out a suitable plat as a foundation. Upon this a sub-covering of clay was placed, over which the beds were laid with soil of fine quality to a depth of 16 inches. The sheds, houses and glass structures placed upon this plat are arranged as portions of a well considered plan, and although of exceedingly simple and plain construction, have served to satisfactory ends. This nursery ground is about two-thirds completed, and half of the houses necessary have been built. The capacity of the ground will be to rear 75,000 young trees, shrubs and plants in the beds, and 10,000 smaller plants in pots or boxes, each year, a number quite sufficient for stocking the reservation as speedily as other necessary works will be completed.

PLANTATIONS.

In accordance with the theory of Park improvement which has heretofore been advocated, the plantations at Golden Gate Park have been arranged in heavy masses upon the higher grounds for the purpose of affording the greatest attainable shelter to the intervening glades and valleys.

The steady northwest winds of the summer months—the ruling feature of this climate—predominate to such an extent in the aggregate of influences bearing upon the development of trees and shrubbery, that a sacrifice of much that is in good taste, and a violation of rules in horticulture well established in other climates, is not only justifiable, but necessary, in the endeavor to overcome these evil effects. Thus, in any exposed locality on the San Francisco peninsula, the pressure of the sea breeze, being constantly from the same quarter has a tendency to bend growing plants out of proper shape, and renders their symmetrical development almost impossible. This evil can only be corrected, upon a large scale, by planting heavy masses of young trees, very close together, gradually thinning out and regulating the outline of the groups as the plants develop. X

The planting at Golden Gate Park has nearly all been done with this view. The trees, selected were chosen for their well-known rapid growth and hardy disposition under existing circumstances, and it is expected that many of them will be supplanted by specimens of other varieties as the primary end is attained.

The real works of Landscape Gardening therefore, have been very limited at the Park, and it cannot be expected, for manifest reasons, that any marked effects, produced by the exercise of this art, will be apparent until the primary object, before alluded to, shall have been accomplished.

The live-oak bushes which compose the great mass of native shrubbery on the reservation, though of much utility in affording shelter to the tender young trees set out amongst them, and pleasing to Park visitors in the absence of other foliage, are not sufficiently in keeping with the class of vegetation desirable in the more finished portions of the Park to admit of their being retained in as great profusion as they now exist. It is, therefore, intended that they give place gradually to other trees, as these develop in their midst, except in certain suitable localities where they will be retained, and accompanied by such other trees as will harmonize with them to produce a class of scenery desirable at these points. The above fact will explain certain seeming transgressions of the rules of taste, in groupings, which are now apparent at the Park.

PLANTS AND TREES.

TREES AND SHRUBS GROWING IN GROUNDS.

Purchased in Spring of 1872	6,630
Raised and planted in Spring of 1872	1,800
Raised and planted, season 1872–73	16,745
Total now in grounds	25,175

NURSERY STOCK.

In nursery, ready for planting out in 1873–74	20,038
Young stock in nursery for planting out in 1874–75	23,900
Total stock in nursery at present	43,938

NURSERY ACCOUNT.

Total number set out in grounds from Park nursery	18,545
" " ready for planting out, 1873–74	20,038
Total raised in nursery	38,583
Young stock in hand for 1874–75	23,900
Total propagated in nursery	62,483

LAWNS AND GRASS PLATS.

A very limited extent of lawn is projected for improvement at the Park, by reason of the great expense of improvement and maintenance of this feature in our climate. But little has been done towards improvement under this head. A few small plats—in all amounting to 1½ or 2 acres—made fresh and green by several varieties of grass or clover, serve only to show what may be done in this direction.

SHRUBS AND FLOWERS.

So many works of lasting utility and immediate necessity have presented themselves for consideration and execution, that the more delicate elements of beauty and grace have of necessity been overlooked for the time being. Several choice selections and collections of rose bushes, shrubs and other plants have been received as donations from various sources, and some of these grace the vicinity of the main entrance drive, while most of them are retained in the green-house, as too frail for planting in the grounds in their present rough state.

SOIL AND FERTILIZERS.

Nature seldom provides a soil so nearly suited to the requirements of horticultural improvements as to do away with the absolute necessity of thorough manipulation and supply of some important ingredients which are wanting.

As a general rule, heavy loams, or adobes, require the admixture of silicious matter, leaf mould, or light vegetable manure, and weak animal manure, and, if they be of a decidedly argillacious or calcareous nature, particularly if damp and cold, the manures may be turned in nearly fresh. In such cases the soil absorbs the gasses of the fresh animal manure, the moisture facilitates the decomposition of the woody fibres of the vegetable matter, while the heat of the former with that generated by the change in the latter element, is advantageous in counteracting the opposite nature of the base of the mixture. Even in these cases, experience has proven it to be the better plan to stack the manures, until fermentation is complete, before applying them to the soil.

Light soils cannot be treated so at all. Sands, particularly, receive and radiate heat freely. They are hungry soils, and neither attract gaseous matter from the atmosphere, nor retain gases of manure put on them; hence, an immediate application of the fresh fertilizer to their surface, even though it be ploughed in, results in a great loss of elements valuable in the formation of vegetation. The fertilizing gases are soon carried off by the atmosphere, leaving a great portion of the vegetable fibres in the loose soil unchanged by fermentation, and, consequently, not in a state to give nourishment to vegetation; while the heat from what fermentation does take place, only produces a greater demand for moisture, without which it tends to retard rather than promote the growth of any vegetation which it is desirable to have at the Park.

Without doubt, vast quantities of fertilizing material are required upon the Park Reservation. From the light character of the natural soil, however, this component of that to be desired must be of a heavy and compact description.

The available sources of large supply are from the street sweepings, stable litter, cow yard scrapings, sewage matter, and night soil of the city.

Heavy animal and vegetable manures are desirable fertilizers for use upon the Park; and as long as first-class material of these kinds may be had in sufficient quantity at reasonable cost, it will not pay to transport hither any other, though it be had for nothing.

Street sweepings in San Francisco are composed of at least one half sand and stone chippings, one-fourth light wood splinters which take long to decompose; leaving only one-quarter of the bulk, and not even a fourth of the weight, valuable as manure on a light soil. It will not pay, therefore, for the Park management to handle this material.

Sewage matter, desiccated night soil, stable and cow yard litter, must be relied upon, though bog peat and vegetable or leaf mould, may be had in small quantities.

At such time as the condition of the Park Improvement fund will permit, this subject should be taken thoroughly in hand. Large quantities of these substances should be collected, at some out of the way points, and piled, with alternate equal layers of heavy, argillaceous loam and sprinkling of quick-lime, gypsum or plaster, until fermentation is completed. The products of the chemical decomposition will thus be stored up in the compound, and retained when it is applied to the sandy soil.

A mixture of such a compost with equal quantities of loam and the natural soil will make a proper preparation for the top dressing of the lawns, grass banks and small flower-beds of the park; and one part of it with one of loam and two or three of sandy soil will constitute good material in which to plant trees and shrubs.

Such a treatment in the preparation of fertilizers and soil for the Park is necessary to effect any marked degree of success in the agricultural department of its improvement.

It must not be looked upon as an unprecedented and costly plan. It will involve, in reality, not much more than half the total amount of labor expended in accomplishing parallel results in the course of the improvement of other parks, where vast beds of clay or heavy loam had to be subsoiled, drained, partly removed and lightened with sand, besides being enriched by fertilizers prepared in compost heaps in nearly a similar way. Or where the muck of bogs or marshes has been removed bodily, subdrainage built, and an entirely new soil brought on.

It is by no means proposed, as elsewhere more fully explained, to treat the entire area of the Park with such prepared fertilizers. Shrubs, grasses, and trees, which will thrive in the natural soil, with very little assistance at first, are to be depended on to cover the greater portion of the rugged ground. The matter of making compost heaps is an important one, though, and should be taken in hand at an early date.

During the past year from 80 to 100 cu. yds. of fresh stable litter has been used upon the Park each week. at the various appropriate seasons, as mulching about trees and shrubs set out in the grounds, to cover in banks and other graded plats which were necessarily left in an unfinished state, as top dressing on the nursery grounds, and for other appropriate and necessary purposes; besides several hundred cu. yds. of well decomposed manure put in the compost, which was used in planting during the winter and spring, as elsewhere referred to.

It would have been well to have collected material of this description for future use, but the resources at my disposal have not admitted of a greater outlay for the purpose.

It would not have been well to have spread over the surface of the grounds all fresh fertilizing material which could be collected, as has been suggested, nor will this ever be a proper course. The gases would be set free to the great loss of vegetation, and detriment to the health of the frequenters of the Park.

MISCELLANEOUS WORKS.

In addition to the works above recounted, there have been erected:

A substantial stable, with stalls for 10 horses, grain loft, hostler's room, and wagon shed.

One two-story house of 5 rooms, hard finished, for foreman teamster's residence.

One hay barn to hold 50 tons hay (rough.)

One engine house for steam pumping apparatus, 12 x 18 ft. ground plan.

One keeper's office, 12x16 ft. ground plan (finished work.)

One gate-keeper's lodge, 6x10 ft. ground plan (finished work.)

The Avenue and the portion of the Park worked upon, has been enclosed by a substantial four-rail and cap fence, 21,232 feet in length, in which 11 large double gates, of 24 feet span, have been put up at the various entrances and Avenue crossings, with movable gates to enclose the Avenue at each end.

Nine heavy draft horses; one five-ton and one two-ton road roller; two large road-sprinkling wagons; two water carts; one lumber wagon; two rock wagons; one light draught wagon; one manure wagon; and four dump carts, are among the items of the stock account, and in constant use. All the above mentioned rolling stock, except the manure wagon and one cart, which are driven into the city frequently, are fitted with rims and tyres from 5 to 7 inches in width, for the purpose of lessening the wear upon park drives occasioned by their use thereon. X

BUENA VISTA PARK.

This reservation has been enclosed by a substantial four-rail fence, 5,450 feet in length, and a cottage of five rooms, for a keeper, placed thereon.

MAINTENANCE OF PARK.

In the earlier stages of Park development and use, even to the present time, the labor of maintenance is so intimately connected with that of improvement, owing to the unfinished state of the works, that a separate account of it could hardly be kept. Much valuable information under this heading has been noted from the experience of the past season, however, and it only requires the confirmation of another year's observations to be enabled to submit complete and reliable statistics of the subject, which will serve as a guide for future estimates and plans.

The principal items, so far, have been the sprinkling, cleaning, and dressing of roadways: watering, training, and otherwise attending to the young trees, shrubs, and grass-plats.

USE OF PARK.

It is gratifying to be able to record the apparent pleasure with which the works at the Park, though yet so rude and unfinished, have been received by the public. Its drives have frequently been traversed by upwards of five hundred vehicles per day, and, on several occasions, the number has exceeded one thousand. The table of visitors, herewith transmitted, a compilation from the detailed records in the Park-keeper's Journal, is the best evidence of the pleasure which the improvement has afforded.

GOVERNMENT OF PARK.

There is no subject more nearly connected with the ultimate success of your charge than that of the proper regulation of the use of the Park.

Its improvement may be tastefully planned, and works skillfully executed—its æsthetic and material development may be gratifying, and for a time its use pleasurable, to the public, but without a carefully organized system of government, and a judicious execution of its precepts, a dissatisfaction with the institution, a lack of confidence in its management, will soon become apparent; for "a large park in the neighborhood of a dense population, will inevitably become a nuisance and an injury to that population if it be not well kept." The accomplishment of this end necessitates a most thorough and careful organization of a keeper's force, composed of men especially fitted by activity, zeal and discretion, for the execution of the arduous and delicate duty which would be expected from them. It should be remembered that the character of people to be met in a public park is not such as an ordinary police force has most to deal with—the criminal element is not present. The character of offences likely to be committed are not, as a general thing, such as require summary punishment, so that the duty of a park-keeper is widely different from that of an ordinary policeman; partaking more of an admonitory than a correctionary character, and to be performed with the utmost vigilance to prevent offence, and render assistance, and in a spirit of politeness, courtesy and firmness, calculated to inspire respect and confidence in the minds of park visitors.

During the early stages of the park work, which have now passed, a thorough development of many desirable attributes of good management of its affairs could hardly, with the very limited resources provided, be expected.

This matter of a properly organized and drilled force of keepers has, therefore, not received that attention which it demands for the future. Although my efforts in this direction have been ably seconded by the keeper and his assistants, there is yet that lack of system in this department, consequent upon the keepers being necessarily called upon for other than their legitimate duty, which can only be attained by making it a distinct organization of well chosen men, under a discreet and energetic captain, whose duties shall relate exclusively to the regulation and government of the use of the Park, subject only to the direction of the General Superintendent or the Commissioners themselves.

RULES AND REGULATIONS.

Consequent upon the establishment of a feature so entirely novel as the Park, in a community unaccustomed to restraint in the use of public property, the task of regulating its use has been a delicate one; and, although the lenient policy towards all classes of travel, which your Honorable Board has seen fit to adopt, has been adhered to, transgressions of the rules and regulations were for a time frequent, and of a character so totally at variance with good order, that a number of arrests were made, as shown by the table herewith transmitted.

I cannot too earnestly recommend the thorough organization of a force of keepers, instructed and drilled to the proper execution of their duty. Each citizen, every frequenter of the Park should feel a personal interest in its preservation and orderly use, and this can only be engendered through the medium of vigilant police duty—mild, admonitory, polite, obliging and dignified in character.

PARK ACCOUNTS.

A complete record of all transactions and incidents worthy of note, is made by the Park-keeper in the form of a journal; from which, accounts of the different works in detail, with items of labor, material &c. expended on each, as well as much other statistical matter and data of interest and utility, are compiled.

Your employés generally at the Park have been faithful and energetic in the performance of their several duties. Especial praise, however, is due to Mr. Louis Enricht, the Park-keeper; Mr. J. S. Henderson, the Head Gardener, and Mr. P. Quigley, the Foreman of Teams, for the manner in which each has conducted his department of the work.

Respectfully submitted,

WM. HAMMOND HALL,
Sup't Golden Gate Park.

APPENDIX C.

REPORT OF THE ENGINEER UPON THE PLAN FOR THE GOLDEN GATE PARK.

OFFICE OF THE ENGINEER TO THE
PARK COMMISSION.

To the Honorable Board of Park Commissioners,
San Francisco:

GENTLEMEN—

I have the honor to request your attention to a consideration of the subject of Parks and Pleasure Grounds, and to submit a report upon the plan proposed for the Golden Gate Park and Avenue.

PARKS AND PLEASURE–GROUNDS.

Although extended observation and systematic arrangement of natural phenomena have, of late years, supplied the data for great advance in meteorological science, the measure of man's ability to moderate climate, and, to what extent such modifications will influence the mental, moral, and physical condition of their originator, will perhaps forever remain questions for further investigation and continued dispute. Nevertheless, there now remains little doubt but that man may, and does, in a great degree, mold the apparently natural surroundings of his home. He is the great disturber of natural laws ; for, although the individual human may bear as small a proportion to the ends attained as the microscopic polyp to the coral formations of the ocean, yet, as many generations of these countless little beings have built up such monuments, so have the oft-succeeding generations of man gradually wrought changes upon the face of Nature, proportionately marked and important. Unfortunately the preponderance of influence exerted by him has had the effect of destroying in a measure the pristine balance of physical nature; for he has found it in this case more profitable and less laborious to tear down than to rebuild her essential monuments.

Thus, no great difficulty is encountered in changing a moist atmosphere to one of less humidity—the clearing of forests and draining of lands effect this, under certain conditions—and an acknowledged advantage is immediately derived; but when the other extreme is approached, far greater obstacles are encountered, in checking the ebbing flow of Nature's current, and restoring the balance, while the benefits accruing therefrom are long deferred.

Vast areas of the earth's surface have been stripped of the natural forest clothing through the medium of the axe and fire-brand in the hands of man, who, thus removing a most potent element in the problems of evaporation and precipitation, has caused great irregularity in the rain-fall of these districts, resulting in alternate drought and flood, and the formation of arid deserts or denuded wastes of the primitive rock. Our earth is not becoming ameliorated and better fitted for the habitation of the human race, except in so far as that race directly undertakes works of improvement with a view to such amelioration. The more direct wants of man are supplied by the most direct tax upon Nature; and, unless there be some compensation and systematic effort made to restore her disturbed harmonies, there is a constant balance of drain upon her resources, and increased disturbance of her laws. Does he want wood: forests, which he takes no pains to restore, are annihilated, with the results just mentioned. There is a demand for lands: when swamps and marshes are diked and reclaimed, with scarcely a thought as to the influence these works may have upon adjacent river-channels and harbors. Water is required for some large city, and forthwith an area many times as great is robbed of its rivulets and brooks—and its fertility—to supply the demand, and the consequences not seriously considered. Crop after crop is gathered from the soil, and the poor return even which the chaff and straw might yield is denied, because its proper preparations and distribution necessitate labor. All such works are productive of apparent benefits, leading to grand results; but only when systems of compensation, direct or indirect, calculated to counterbalance the baleful results indicated, are adopted, may they be said to be properly devised and regulated. Happily, many of the great works, having an appreciably direct influence upon his surroundings, which man has found profitable to undertake, although disturbing the counterpoise of Nature's laws to an extent which causes an ultimate reaction upon his commercial welfare, exert a direct salutary influence upon his individual well-being—physically, morally, and mentally; while others, laden with these latter benefits, bear with them also some compensation to Nature for his thoughtless calls upon her.

Great tracts of barren sands, which had, year by year, advanced upon the smiling plains of France, or spread desolation over portions of Denmark, Holland and Prussia, have been converted into productive meadows and thriving forests; while, at the same time, the driving winds, which, as though not rude enough in themselves, transported the seeds of pestilential fevers—gathered in their course across the marshes of the sands—upon the inhabitants of the adjacent districts, have been in a great measure checked, and the fountain-heads of the miasma itself eliminated. In a material, though less appreciable degree, from the greater difficulty of arriving at correct results, the careful improvement of extensive tracts as farming land or rural parks has influenced the sanitary condition of the inhabitants of their neighborhood; while the great benefits derived in this respect, with their consequent mental bearing and marked moral influence, from the building of large urban pleasure grounds, is now generally recognized.

Parks have frequently been spoken of as the lungs of cities, or, as the lamented Downing so poetically designates them, "green oases in the arid deserts of business and dissipation, for the refreshment of the city's soul and body." Primarily, they are intended to provide the best practicable means for healthful recreation for people of all classes, and the influence which they thus exert upon society can scarcely be overestimated. With drives and rides for the rich, and pleasant rambles for the poor; quiet retreats for those who would be to themselves, and thronged promenades for the gayly disposed; sheltered nooks for invalids, and open grounds for lovers of boisterous sports; tracts adapted to the special wants of children, and arranged to insure their comfort and welfare—the modern urban park is, indeed, the municipality's open-air assembly-room, acceptable alike to all, and pleasing to each of her citizens. With the promotion of facility for any of man's habits, which in the rude state have afforded him even the most moderate amount of pleasure, his desire for their enjoyment increases in a rapidly augmenting measure; he finds new features of interest and elements of attraction in that which, under less propitious circumstances, would be little more than tolerable. But when these incidents of convenience are accompanied by surroundings of absolute luxury, the charm reaches its height, and the enjoyment of that particular custom is likely to be complete in the individual and popular with the mass.

The charm of a drive or ride is greatly enhanced by smooth and elastic roads, but reaches its fullness when these roads lead through varied scenes of interest and ennobling influence, under favorable climatic conditions. Pedestrianism, so much neglected by Americans, is invested with renewed interest by the creation of pleasant paths amid agreeable and diversified surroundings, and receives an impulse in popular favor. Thus as facilities for these health-giving exercises are increased, the pleasure derived from them becomes more appreciated, their use greatly augmented. Parks are directly influential in promoting enjoyment and popularizing healthful recreation, thus exerting an important bearing upon the sanitary condition of their frequenters; and, as a perfect state of mental action depends, in a great measure, upon a healthy physical constitution, their influence upon the mind through the same channel is scarcely less to be appreciated, though this organism receives its greatest benefit from the quieting and salutary effect of the surroundings of the visitor, in contrast with the rush and turmoil of urban life.

Public opinion is fast coming to the conclusion that the acts of the criminal are directly attributable to the short-comings of society at large, as responsible for the state of things necessary for his development, and the circumstances under which his crimes are committed. He is regarded as society's moral failure. The extension of rational enjoyment, with guiding discipline, is now regarded as the great preventive of vice and crime. Assuming these grounds to be well taken, whatever facilitates such innocent amusement, and provides the most refining and salutary pleasures for the gratification of all, must exert a potent influence upon the moral condition of society. The accepted city park of the day, with its auxiliary features of art and science, consequently may lay just claim to credit as a great moral reformer. Nor are these all the respects wherein the effect of public works of this nature may be proved beneficial to mankind. As cultivators of public taste and auxiliaries to the great educational system of the country, their influence is scarcely less appreciable. No one can visit a tastefully and judiciously improved ground without being impressed by a general idea of the fitness of things as there arranged, and perhaps a correct appreciation of some well-devised detail of its construction, which in after life will serve as his model or standard for such works.

Some classes of park scenery are fitting settings for works of art, such as statues, monuments, and architectural decoration. These, carefully selected and executed, can not fail to educate the popular taste to a standard of excellence otherwise hardly attainable. And again, what more suitable place for the location of studies in natural history: botany, including horticulture, floriculture, and arboriculture, exemplified in the conservatory, greenhouse, and the grounds at large—zoology, in a quarter properly designed therefor—meteorology, for the observations required in which study, no better locality can be selected near a large city than upon its park reservation—all here contribute to the entertainment of the visitor, and sensibly exert a potent influence upon his understanding and appreciation of Nature.

With the philanthropic and patriotic impulse which now prompts the movement toward universal education of the head, should go a just conception of the importance of guiding the emotions, and regulating the habits of members of society. And thus it is conceded to be the duty of every wealthy community to foster such elements of refining influence as will tend toward a cultivation of the feelings of its least favored members. It may be difficult for the unobserving resident of a country home—and the majority of such are oblivious to the blessings of their situation—to appreciate the influence of the broad and simple lines of natural scenery upon the mental and moral condition of humanity, and thus how the establishment of a rural park, within easy reach of the crowded lanes and courts of a great city, may be regarded as "a most intelligent, philanthropic, and patriotic enterprise." But the dwellers in such large communities are beginning now fully to recognize the importance of these institutions, and nearly all the great cities of the Atlantic States are establishing most complete and finished pleasure-grounds. Fortunately for the onward movement, these enterprises are found to pay—to yield to the city a direct moneyed return on her investment. It is manifestly to the interest of a municipality to create attractions which shall influence those who have acquired wealth to remain within her limits; to build in the city their homes, and not only invest in her enterprises, but expend the profits derived therefrom among her people.

The improvement of pleasure-grounds and *boulevards* has contributed largely toward making several European cities, Paris particularly, the centres of independent wealth. The great metropolitan towns of the Atlantic States are vying with each other in the creation of attractions calculated to keep their wealthy population at home; and it is found that parks, of all public improvements, exert the most influence to this end, while also working out the other beneficial results before noticed.

When a fortune has been amassed, an independence attained, its possessor looks about for a luxurious home; and, although his desire for adventure may induce a temporary absence upon a foreign tour, the associations of years will prompt a wish to return and live where his victory has been won, and if that place offers the inducements of a well-constructed modern city, there he will most likely settle. A public park, while to the poor a free place of resort, necessitating no expense for its enjoyment, presents to the wealthy an opportunity, and thus becomes the cause, for the gratification of luxurious and expensive pleasures. The building of elegant mansions and grounds in its neighborhood by people who, without such inducement, would seek homes in some rural locality, adds largely to the taxable property of the city, and affords the greater amount of employment to the artisan from the more expensive character of the structures; while the maintenance of such establishments, with their concomitants of luxury, goes toward enriching the small manufacturer, the mechanic, tradesman, and laboring classes. And thus, too, the advance in value of unoccupied lands situated adjacent to such improvements, while yielding an immediate revenue to the municipality in augmented tax returns, is not at the expense of other portions of the city, but is due, in a great measure, to the retention of a population, which, without the inducements of the improvement, would not remain in the city.

If the owners of these lands are apparently benefited by such increase in value of their real estate, it is to be remembered that this brings with it an immediate increase of taxation, which goes to pay the interest on the money expended for the park improvement; while the principal is charged, by the issue of long-term bonds, to after generations, who, holding the property in smaller tracts, at greatly advanced valuations, and reaping the full benefits of the fully matured pleasure-ground, will gladly pay it, and there is found the direct blessing of the park itself to the entire municipality, as well as a present reflected benefit to the holders of real estate in all its quarters. No more striking examples of the effects ascribed to public improvements of this class can be cited than those presented by the cities of New York and Brooklyn. The former may be regarded as the cradle of the more modern park architecture, and Downing, Kingsland, and Olmsted, as its progenitors.

Mr. Downing wrote, in 1850: "Is New York really not rich enough, or is there absolutely not land enough in America to give our citizens public parks of more than ten acres ?"—showing how little the people of Gotham at that date appreciated the idea of a grand city pleasure-ground.

In 1856, the work of improving Central Park was commenced, after a bitter discussion, which had been prolonged through a series of years, over the advisability of withdrawing so much land (about 770 acres, then) from that available for the commercial purposes of the future, and the expenditure of so great a sum of money (then estimated at $1,000,000) for its improvement, as a pleasure-ground. The Hon. Mayor, Ambrose C. Kingsland, fortunately, was of the opinion that, for the very reason that commerce would soon demand the entire area of the island, a large tract should be immediately reserved from its grasp; and he predicted, in 1851, that "the establishment of such a park would prove a lasting monument to the wisdom, sagacity, and forethought of its founders, and would secure the gratitude of thousands yet unborn, for the blessing of pure air and the opportunity for innocent and healthful amusement."—(*Special Message, April 5th*, 1851.)

Several extracts from the report of a special committee of the New York State Senate, under date of January 25th, 1861, will best show, in a few words, the progress of the Park movement. The committee say, of the financial bearing of the Park improvement upon the city: "Although the committee do not think proper for municipal corporations to purchase lands on speculation, yet it can not be concealed that the Central Park has been, and will be, in a merely pecuniary point of view, one of the wisest and most fortunate measures ever undertaken by the city of New York."

Of other influences of the great work, they say: "The general benefits accruing to property in the city by the Park are not easily estimated in dollars and cents. They are found in the opportunity afforded by the Park for recreation, in its sanitary benefits, and in the inducements to persons of wealth and leisure, from all parts of the world, to make the metropolis the place of their residence, and as a source of refined enjoyment for the whole population of the city."

And again, to further trace the development of these influences, it appears—from the annual Report of the Commissioners of Central Park, dated January 1st, 1867; being after the tenth year of the Park improvement—that, "the increased tax valuation of property in the three wards [12th, 19th, and 22d, adjoining Central Park,] from 1856 to 1866, was $53,640,830. The rate of tax for the year 1866 was 2.30, yielding on the increased valuation, above stated, an increased revenue of $1,233,739.55."

The total expenditure for construction from May 1st, 1857, to January 1st, 1867, was...............	$ 4,986,035 05
The cost of land of the Park to the city was.......	5,028,844 10
Total cost of park to that date	$10,014,879 15
The annual interest on which, some at five and some at six per cent., amounted to	$596,899 75
Which, taken from the increased amount of revenue from taxation	1,233,839 55
Yields, as net income to the city, for the year......	$636,839 80

And the President of that commission, in his report dated August 21st, 1872, says: "The outlay on the Park is chiefly an investment for future generations....The value returnable for the outlay will correspond with the enhancement in value of life which results to those living in the city....Up to the present time, former estimates appear....to be fairly sustained, and the financial condition of the city continues to be the better for all it has expended and is expending on the park....The excess of the increased tax revenue in these three wards, alone, for this year, over interest on the cost of lands and improvements, [Central Park] is $2,726,595.97."

The prophecy of Mayor Kingsland has been, if possible, more than verified. The people of New York look upon their park as a blessing cheaply purchased, though it had cost, up to January, 1872, a total of $12,448,623.50, ($5,028,844.10 for the land, and $7,419,798.40 for construction) besides about $2,750,000 for the maintenance of the park itself, and over $500,000 for the structures for and maintenance of its scientific accessories.

Previous to the commencement of operations upon the New York Central Park, Brooklyn had, from the more rural character of its suburbs, claimed the palm as the most attractive city to the independent classes. Observe an extract from an appendix to the report of the Brooklyn Park Commissioners for the year 1868—being a *resume*'of the history of Prospect Park in Brooklyn, from the pen of Mr. Olmsted, the accomplished landscape engineer: "New York had fairly established [1865] the superior advantages of a concentrated capital in the production of a comprehensive, well-equipped, and well-kept park, adapted to draw together all classes of the community from every part of a great city. It had also begun to be realized that as long as Brooklyn offered nothing of the character of New York Park, it must expect to fall rapidly into the back-ground as a competitor in providing attractive sites for the residence of a large tax-paying class of citizens."

The increased tax revenue to the city of Brooklyn, generally attributable to the enhancement of values by the improvement of Prospect Park, is even more decided than in the case of the New York work, and greatly exceeds the interest on the money expended for the lands and improvement, as may be seen in the reports of the Commission having it in charge.

Each of these great works was intrusted to the management of a Commission, the members of which served gratuitously, and executed their trusts in the most judicious and honorable manner, to which cause may be ascribed a great part of the collateral benefits derived, as well as the success of the enterprises themselves. It may be said with truth that the rapid advance in price of lands adjacent to the Park improvements, is not altogether due to such works, but also to the naturally increased demand for residence property in a growing town. But it is generally conceded, in cities where such improvements have recently been made, that the proportion of effect which can be ascribed to this cause is to an amount which renders such urban adornments the best paying public improvements. The erection of a large and elegant building for municipal purposes may increase the demand for business property in its neighborhood, but, possibly, at the expense of a correspondingly decreased demand in other quarters. It certainly does not create permanent business, nor will it serve to retain in the city, as a Park does, any portion of a population who have attained independence sufficient to select homes.

It may also be said that the climatic conditions of San Francisco are such as to render unattainable some of the most important elements in a park, and do away with much of the necessity for a pleasure-ground, which makes those of eastern cities most acceptable. Let it be remembered that in lieu of those features in other

Parks which cannot be adopted here, there is a long repertory of most interesting subjects to choose other attractions from, which may not be brought together in any other Park in the world. Furthermore, if San Francisco has not the oppressive weather of summer to render the cooling shades and breezes of a Park peculiarly refreshing and beneficial, her citizens are subjected to chilling winds and fogs, the effects of which should be decreased, if possible, and clouds of flying dust, from which some escape should be provided.

It is continually asserted that this is a most invigorating climate in which to live out-of-doors—if one can stand it. Clearly there is something to be withstood, accompanying the bracing elements of the atmosphere, and it is generally conceded that the faults of the climate, above alluded to, go far toward making up the sum total of this deleterious influence. Acknowledging the obligation of every municipality to guard the interest of its citizens, by instituting proper sanitary regulations, and providing the opportunity for innocent recreation, there is probably no large city in the United States which is so strongly called upon to essay some decided steps toward these ends, for the summer months, as San Francisco. There is certainly none where a properly devised park may do so much in the way of their accomplishment. A full appreciation of this depends upon a clear understanding of the nature of park improvements and the use thereof, with a conception of the extent to which local effects of climatic influences may be modified.

Out-of-door improvements, coming under the head of landscape engineering, ornamental architecture, and gardening, have ever been governed by the more effective phenomena which have entered into the composition of the several climates under which such works have been prosecuted; and planned with the view of contributing to convenience, comfort, and enjoyment in pursuit of the peculiar customs, made most acceptable by such climatic influences.

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Under the burning sun of Persian skies, the principal features of the garden have always been the straight and shaded avenue, in whose centre a rippling stream or placid canal gave seeming as well as veritable coolness to the atmosphere, thus invited to move along its course; the sparkling fountain, or agitated pool, surrounded and overhung by gay and highly perfumed flowers and shrubs—all contributing to the luxurious repose of the habitant, who, in deepe~~st~~r shade near by, drowsed the sultry hours away.

The Italian gardens are rich and elegant combinations of ornate architecture and ornamental shrubbery, arranged upon rectilinear ground plans—of which the several portions are at different elevations—whose artistic features and extended outlook lend a peculiar charm to the long twilight or evening promenade, rendered possible under the skies of Italy.

An English park presents open landscapes of meadow, lawn, and slope, interspersed with irregular plantations, and meandered by winding walks and drives of diversified character—in seeming imitation of the ever variable climate. These pleasure grounds present in their broad, free, and simple features, a constant invitation to the health-giving exercises and amusements of the English people, to which they are prompted by the bracing atmosphere of their country.

In the French pleasure-ground, we recognize a combination of the artistic elegance of the Italian garden and the natural charms of the English park, each modified by the other, with an enlargement upon the Persian avenue, canal, and fountain; all adapted—in the broad promenades and drives, the *café* concerts, and deep-wooded effects—to the love of display of attire and equipage, the gregarions tendency, and the romantic natures of the French, which have generated, fostered, and perfected habits and customs of recreation most enjoyable in the climate of France.

The German present many features of the English and French parks, with some interesting novelties not to be found so fully developed in either of the others. Less free and open than the English, yet rivaling them in wooded effects; presenting less extent of elegant treatment than the French, though equally charming in local results; they are suited to the enjoyments of the German, as dictated by a more rigorous and less equable climate than that of France or Britain.

After a careful study of these works in other lands, and consideration of the influences which local climatic phenomena would probably exert upon the habits and customs of the people, American parks have been molded with a view to render their features most agreeable and acceptable to their frequenters under such conditions. We have, therefore, to regard the prominent phenomena which go to make up the climate of San Francisco—how far their influences may be ameliorated or enhanced, as may be expedient, in local effect—and estimate what bearing such conditions are likely to have upon the manner of use to which a pleasure-ground will be put by her citizens, with the possibility of maintenance under such use, and thus determine what features of a park will be desirable; the requisite characteristics of each; their adaptation to the site, with the general æsthetic treatment which will most conduce to pleasurable occupation and economical keeping. As to the selection of appropriate elements, and their arrangement in a scheme for the Golden Gate Park, under these circumstances, I call attention to a description of the plans adopted.

The ordinary use of the parks of the Eastern cities is confined to the Spring, Summer and Fall months; during which seasons the customs prevalent more nearly resemble those to be observed in English pleasure grounds, with some resemblance to the French, but still a decided air which stamps them American. It has been a primary object in the arrangement of these grounds to provide for the greatest freedom of. use possible to be allowed amidst the many frail and delicate elements entering into the composition of a park; which treatment, on account of the prevalence of those feelings of inalienable right in public property, and personal sovereignty, must ever be characteristic of pleasure grounds for the American people.

In the Atlantic climate, where the long days of Summer are most oppressively warm, and evening fails to bring relief, a result parallel with the cooling shades of Persian and French gardens has been attained by a rustic treatment, embodying sylvan and picturesque effects, in keeping with American scenery and ideas of freedom; and thus an escape from the stifling atmosphere of the cities' streets has been in a measure provided by the establishment of these parks, properly improved.

A comparison of meteorological statistics will show, as every person of close observation knows, that in no other climate in the world, where the improvement of a large park has been attempted, may it be put to pleasurable use, as such, on as great a number of days during the year as that of San Francisco. As a general rule, upon a greater portion of every day during April, May, September and October (all of most days), nearly every day during March and November, a portion of nearly every day (morning) during June, July and August, and on more than half of the days during December, January and February, may the ordinary recreations of riding and driving, or walking in the open air be agreeably indulged in. The register of the weather, and record of visitors which have been kept at the Golden Gate Park, when compared with those of Eastern parks, taking collateral circumstances into consideration, fully sustain this assertion.

The parks of the Atlantic cities are resorted to, during the Winter months, for little else than the amusement afforded by skating upon their ponds, and, on account of the insurmountable nature of the obstacles presented, but little has been attempted in the way of rendering other out-of-door recreations attractive at that season; while the excessive heat frequently experienced in Summer, deters many persons from driving and riding at that period. The amelioration of this climatic phenomenon has constituted a prominent aim in their improvement, in attaining which end, shade trees, watered lawns, ramifying lakes, and fountains, have been the important agencies employed.

Modern scientists ascribe a greater influence to forests as local barricades against wind, than as refrigerators of the atmosphere; and certain kinds of trees (evergreen conifers) are more effective in removing moisture, by precipitation, from the lower stratum of air, than are plantations in general in contributing to its humidity under opposite conditions.

Silicious sands, of all soils, are most affected by solar heat; they receive it freely, conduct it slowly, and radiate it gradually. They absorb moisture from the atmosphere least readily (nearly), and evoporate it most rapidly.

The heat attained by the sandy soil of the Golden Gate Park upon a warm Summer morning, is now rapidly dispelled by the driving winds which sweep over it in the afternoon. Check the force of these winds by heavy plantations, and the atmosphere of the intervening glades (particularly on the leeward side of the park), relieved of its moisture to an appreciably beneficial degree by the forest, will be influenced during the afternoon by the radiated heat from the sandy soil and plants growing thereon.

It will readily be seen, then (and for other reasons given elsewhere), that a park for this climate, to insure salubrity, should be located upon a very pervious, sandy soil, and that the character of its improvement should be such as to embody alternate heavy plantations and open spaces; the former so disposed as to best shield the latter from the winds, with the glades situated and of such size that they may be thus protected, without being under the influence of the woods to a degree which would render them damp. There can be no doubt but that great breadth of landscape effect will thus be, in a measure, defeated; but its sacrifice will be to the comfort and health of those who will find other elements of attraction, made possible by its absence.

It is not too much to affirm that the improvement of San Francisco's park, in this way, will exercise a greater influence in ameliorating the faults of her climate—as experienced within itself, and immediate neighborhood—than the parks of other cities have, toward parallel ends; and thus, even by this most simple and unassuming style of work, might the Golden Gate Park be rendered benefical to San Francisco.

PLAN FOR THE GOLDEN GATE PARK.

The Art of Landscape has for its object the shaping and adaptation to specific uses, the decoration with materials of continued natural development and artistic design, of the face of nature.

As the general laws of the painter's art are equally applicable whether his subject be a portrait, a landscape, an historical, or genre work, so the aesthetic rules upon which this art is founded, should govern its professor's designs, whether the subject in hand be a wild valley of the Sierra, or the gently undulating surface of a City Park Reservation.

As in all works of taste, the fundamental law of the Landscape art is embodied in the preconceived idea of a fixed purpose—a definite effect—to be attained by the work; only secondary to which, the considerations of the possibilities of the particular case in hand with the material afforded, presents itself; while the adaptation of the composition to certain proposed economic purposes brings out the full measure of aesthetic design.

A city park, in the modern acceptation of the word, is a portion of land with the semblance of a natural formation, but adapted by art to the requirements of large and varied bodies of pleasure seekers. The elements of its construction are of a two-fold nature—namely, those which are shaped by art and intended to remain as modelled, and those which are placed or disposed by art to be developed by nature. The latter class go to make the true, park, the former works are necessary for its preservation, enjoyment, and by contrast to heighten its effects.

A park therefore, though containing within itself the appurtenances necessary for the comfort and pleasure of great masses of people, as a whole, should be an agglomeration of hill and dale, meadow, lawn, wood and coppice presenting a series of sylvan and pastoral views, calculated to banish all thought of urban objects, and lead the imagination to picture space beyond as a continued succession of rural scenes and incidents.

The plan which I have prepared for the Golden Gate Park is, in the main, based upon the sketch submitted and explained in my communication, dated Dec. 30th, 1871, and contemplates: First; The improvement of the Avenue of approach and about 300 acres of the main reservation as a finished modern pleasure ground, whose works of utility are fashioned after those of Eastern Parks, and whose aesthetic design is governed by due consideration of local circumstances: Second; The reclamation of the dune sands, the cultivation of forest trees thereon, and the construction of two drives—one near the northern boundary of the reservation, and one near its southern limit—westward, from the finished park, through this young forest, to the Ocean Beach: And third; The improvement of this beach by the erection of an artificial sand dune upon its outer half, to be in time surmounted by a road, the building of a broad sheltered drive upon its inner side—as elsewhere more fully discribed—and the construction of a large tidal lake of salt water inside of this drive and within the boundaries of the Park. This plan would give San Franciscans in a few years a finished pleasure ground commensurate with the population of the city; a tract of forest land with drives through it; and an improvement at the beach without parallel as a pleasure drive in the world. The cost of maintenance would be confined to the three hundred acres of finished Park, and that of the drives, only, throughout the remainder; until, in after years, the entire tract might be brought under a high state of cultivation, as the growth of the city demanded an extension of pleasure ground.

Although providing for works of taste in the architect's, and sculptor's arts, this plan does not necessarily embody the most expensive class of work, nor even the completion of so much as is designed for many years to come, in order to make its present occupation pleasurable.

For obvious reasons, the class of scenery most easily attained, to some degree of perfection, within the limits of a city park reservation, will partake of a pastoral nature; and to prevent the monotony, which would result from too close an adherence to this character of treatment, local passages, strongly contrasting therewith—namely, in the picturesque and gardenesque—are appropriately introduced. Peculiar climatic conditions necessitate a somewhat odd treatment in the case of the Golden Gate Park; chiefly in that an artificial warmth of feeling is demanded, which can only be supplied through the enrichment of the ground plan by graceful, not stiff, architectural figures, the introduction of a gay and sprightly treatment at certain localities, and a disposition of elements in the material design in a manner to counteract the effect of the more disagreeable climatic influences; and herein chiefly rules the law of possibility, as before alluded to.

As the principal accessories to the landscape elements, may be mentioned the avenues and architectural structures.

AVENUES.

Roads, pads and paths are required to facilitate driving, riding and walking, and thus, by affording ready avenues of communication, they open up the beauties and intricacies of the natural scenery, and promote the enjoyment of the rural elements of the place. They are pleasing features in the landscape only when the diversity in color of the material of which their surface is composed affords a desirable contrast to the general tone of the scene. Accessory to the surroundings, their presence is agreeable to the participator in the enjoyment which the Park is intended to afford, only, where—as defined above—they do contribute to the landscape effect, when their smooth and elastic surface promotes the enjoyment of locomotion, and when, by their gentle and graceful curve into the obscurity of the distance, they invite to continued research, and engender an interest in the view which they promise to present. They are useful and necessary only in so far as they contribute to the enjoyment of the visitor, and that they relieve the turf and other delicate elements from an amount of abrasion of wheels, hoofs and soles which would soon work their destruction. These channels, therefore, are desirable in the sum of the several measures in which they are agreeable and useful.

It will readily be seen then, first—that the length of avenue space in a park must be the least which will thoroughly develop the grounds; second—that the width of these channels shall be such as to amply accommodate the greatest anticipted travel; and third—that their characters should be such as to especially adapt each to the specific use to which it is to be put.

In the application of these views to the designing of a plan for the Golden Gate Park, the result of experience elsewhere, modified by a consideration of local influences, and a comparison of the effects thereof upon the habits and custom of the people, is our best guide.

DRIVES.

The sharp bracing atmosphere of the San Francisco climate; the keen nervous temperament of her business men, make the demand for an exhilarating out of door exercise, becoming to the dignity of adults, greater, perhaps, than in any other American city. The facility with which money has been accumulated here in past years has given rise to the prevalence of the most expensive luxuries, which are freely indulged in by persons of limited means. Riding and driving are carried to a greater extent here in proportion to the number of inhabitants; there are more private carriages and horses kept in proportion to the number of men of independent fortune and leisure; more light vehicles used for business purposes; the livery stable interest is much more extensive, and the stock kept for hire of a better class, than in any of the Eastern cities.

Consequent upon the prevalence of high winds during a considerable portion of each year, the broad, straight Boulevards, built expressly for pleasure driving, which relieve the road-ways of Eastern Parks of much travel, cannot be made acceptable for this purpose here.

These pleasures will ever be indulged in to an exceptionally great degree by San Franciscans, and the roads of the Park, in time, well sheltered by plantations, will be the scene of action. They must therefore be spacious. Accordingly the drive in the avenue leading to Golden Gate Park averages 74 feet wide, or 70 feet in width of clear roadway—which is 10 feet wider than the widest roadway in Central Park, New York; and the main drives in the Park will range from 45 to 55 feet in width—a proportionate increase upon those of the work named.

WALKS.

There are no such exceptional circumstance of amount of use affecting the extent of walk-way necessary in Golden Gate Park, but equally influential agencies which control their location. These channels, by reason of the winds, are planned to the lowest and most sheltered portions of the ground, and kept well away from the roads to avoid too great a width of space necessarily devoid of sheltering plantation, except at the divergence of the main entrance drive, where a breadth of effect, commensurate with the view into the lawn beyond, is sought, by throwing all the avenues together in the foreground.

SPECIFIC STRUCTURES.

In the study of the aesthetic design we must commence with an analysis of the wants of park visitors in general, and the probable frequenters of San Francisco's park in particular. This insensibly leads to a classification of these pleasure-seekers, the designing of elements especially adapted to the requirements of each, and so we are brought to the main architectural works of utility necessary, with the purpose and proposed effect of their immediate surroundings.

The people of the Eastern cities visit their parks in greatest numbers during the oppressively warm weather of the Summer months, though at this very time these populations are depleted by the general exodus of the independent classes to their country resorts. Thus, it appearing that the number of pedestrian visitors to these parks is much the greatest during this exceedingly hot weather, and that the number of equestrians and vehicles is proportionately greater in the Spring and Fall months, we conclude, as is easily seen by observation, that the real object of the visit to these parks is to obtain relief from indoor, debilitating influences, and that this is found in the sojourn amidst the cooling and refreshing influences before mentioned.

In the climate of San Francisco there are many days throughout the year when a sharp drive or ride, a quick walk in the bracing sea air is most pleasurable, but the lingering stay so attractive in Eastern pleasure grounds cannot be indulged in agreeably unless there be limited localities improved with the view of affording the greatest attainable amount of shelter and warmth, with closed structures of entertainment and repose, whence the rural aspect of the surroundings may be enjoyed when the disagreeable influence of the winds is at its height.

As a basis upon which to design these structures, and to study the allotment of portions of ground to be set aside for their occupation as well as for other specific purposes, I have classified the probable frequenters of the park according to what would seem to be the requirements of each in a place of entertainment, as follows:

First—The eminently respectable and well-behaved portion of the adult community who demand a first-class reception.

Second—Ladies with their families, children in charge of nurses or guardians, boys and girls, and ladies who may wish to enjoy themselves in a homelike manner.

Third—Large picnic parties, and very many persons who would approach the park on foot or by public conveyance, and who being composed in a great measure of those who would enjoy more freedom than would be found in the treatment of the districts designed to suit the two first named classes, demand a distinct character of entertainment.

Fourth—Gentlemen who wish to speed their horses, and require an entertainment in the neighborhood of the locality where such privilege is allowed.

To receive these guests I have provided for four closed structures; of which the Manor House, a large and elegant building, the main architectural feature of the park, is intended more particularly to meet the demands of the first mentioned division of park visitors; the Dairy, to be the centre of attraction for the little people and their associates; the Café to supply the wants of the great body of picnickers; and the Hostlery to be just that place of retreat suited to the last mentioned class of pleasure-seekers.

THE DRESSED GROUNDS AND MANOR HOUSE.

Having fairly entered the park on the main drive from the avenue, the view forward will reach across a long stretch of lawn studded with groups of trees, growing dim amid the overhanging foliage on the south ridge, and, although introduced by architectural decoration and the fountain in the foreground, will partake of a pastoral nature. The valley thus overlooked, constituting the principal dressed ground in the park, is designated the "Lawn." It is bordered on the south by the East Lake, and well sheltered on the ~~south~~ nor and west by a series of wooded knolls which lie about midway between the northern and southern boundary of the reservation. Just where this line of hillocks has merged into a broad plateau, at the western end of the Lawn Valley—about half a mile from the main entrance, and not in the field of view from it—is proposed to be erected the Manor House. Here it will overlook a portion of the Lawn, and afford fine vistas into almost every quarter of the East Park, and although a striking feature itself in some of the landscapes, it will not be an obtrusive object, but seldom appearing in the views from the east, south and west walks and drives of this portion of the reservation, when the plantations contemplated have developed to a moderate height. From the middle hill road, on the north, its aspect will be as the crowning feature to the architectural terrace, which is designed as a carriage concourse overlooking the middle lake, whose balustrade will, in this view, serve as a setting to the structure beyond. This terrace is also the principal accessory feature to the Manor House, serving the purpose above indicated as well as that of a waiting ground for carriages. The approach to it is by an easy sweep of road from the east, and an avenue continuing on to the west leads to an octagonal turning ground bordered on the north and south by sheds for horses and carriages, which will be completely hidden from view by heavy plantations. The Manor House, with its adjacent grounds and other features will in time be thoroughly protected from the winds by a heavy belt of evergreen forest trees to be planted upon the ridge, which forms the culminating point of this plateau upon the west and northwest.

This house of entertainment should be a high-pitched one story structure. It might very well be of wood, on a brick foundation, well raised above the level of the terrace. It should contain Drawing Rooms, a Dining Hall, a Library or Reading Room, Billiard Room, a wide Corridor with semi-private Supper Alcoves looking out on the grounds upon each side, and the necessary Kitchens and Storerooms in a basement. There should be a Veranda around, partly enclosed in glass, like a Conservatory, to be used as a Promenade on boisterous days.

Dairy

THE CHILDREN'S QUARTER AND ~~DIARY~~.

None of the inhabitants of San Francisco stand so much in need of a place of resort especially adapted to their peculiar wants, as the children. There are no green fields, no quiet woods, or turf-covered hill-sides, where the little ones may romp about in the pure air. There is not even a public square, improved with any design to affording a warm and protected verdant spot fit for their frequent use; and although the occasional ride in car or carriage may take them away from the closeness and dirt of the crowded thoroughfares, it is only to put them down amidst the dust and sand of most inhospitable suburbs. The Park will unquestionably supply this want to a great extent. Boys of all ages, girls, nurses with small children, and mothers with their entire families, will resort to it. Their interest though would soon flag, their enjoyment be of short life, should they not find elements of attraction especially suited to their tastes. We cannot expect to have a cage of monkeys, a tank of seals, a pair of camels, nor yet an ornithological display, at least, for some time to come. Until much else has been accomplished upon this tract—until after the lapse of years, when its improvement is satisfactory as a Park proper, these auxilliary features should be left to private enterprise as now so ably conducted. Though these features will, no doubt, some day be properly introduced upon the Park, they are not the most desirable nor the most beneficial elements of a pleasure-ground, even for the youngsters.

A warm, sunny, protected nook, with a decidedly rural air, fitted with the appliances for children's games and entertainments, easy of access, retired and cut off from the main thoroughfares of the Park, is the great desideratum for little children. And so, the conveniences for croquet, rolling hoop, blindman's buff and other kindred games, will form an attraction for the larger girls, while a good ball ground will supply all the wants of the boys. To answer these requirements has been the object of setting aside the locality which I have designated the "Children's Quarter," and of planning its improvement, in a great measure, with a view to the special amusement of little children, and the entertainment of girls and ladies disposed to retirement; and of improving another locality—the "Green"—for the use of boys as a ball ground.

The Children's Quarter occupies the greater portion of the east end of the Park, south of the main Entrance, east of the Lawn and Lake, north of the Kate Street Entrance, and adjoining Stanyan Street. This tract is about ten acres in extent, of which nearly two thirds is to be improved with a view to its peculiar use. Of course there must be a house of refreshment and shelter, and it should be so located, planned and kept as to harmonize with the proposed atmosphere of the quarter. I do not know of any more appropriate name for this, than that adopted for a similar institution in New York Central Park, the "Dairy"—a name indicating the character of entertainment properly supplied. This place should not present any particular attraction except to the children and those who wish to have a quiet time. To insure this, I have located the house away from the carriage roads, (at a point naturally well-sheltered), where it will be easy of access by the two main entrances on the east, and planned walks from it, into the body of the Park, crossing the lines of driveway by under arches, so that there is every facility of communication without liability to accident. There will be in its neighborhood, six croquet grounds, a large play-house and grounds for little children, a long sheltered avenue for trundling hoop, besides various walks, rambles, bowers and seats. The house should be a one-story, wooden structure, in the Rustic or Backeted Gothic, or Swiss style, on a brick foundation.

THE PICNIC GROUNDS AND "CAFÉ."

About four hundred feet south of the north line of the Park, between First and Sixth Avenues, lies the North Ridge; for the eastern half of its length, a sharp backbone, forty to fifty feet high, its western portion spreading out into a broad, rugged, topped hill. Along the crest of this ridge a drive has been built from whence the live oak bushes, with which the hill is covered, particularily on the northern side, cause it to present the appearance of being thickly wooded. This effect it is designed to increase, by trimming up the oaks and interspersing a variety of suitable trees which will shoot up above them in clumps. Rambling through this open wood, on the north side of the hill, and following closely the natural topography, an extended series of walks has been designed, with several rustic bowers, a goodly number of seats, resting places, and one large rustic shelter. At the turn of the road near this latter feature, a space for a very roomy carriage-step has been provided, and a large parasol projected thereby. Thence the main walks lead into the body of the ramble and down into the valley just north of the drive and opposite the Second and Third Avenues, where, in an amphitheatre in the hills, is an excellent location for the proposed Café. This house, with its immediate surroundings, well sheltered as it will be, might well be fashioned after similar institutions in European Parks. Roomy and airy, with plenty of balcony space, a limited amount of green turf and gay flowers around, a music pavilion opposite, and many inexpensive works of convenience and comfort in the neighborhood.

THE TURF AND HOSTELRY.

Consequent upon the taste for driving, which is developed to so remarkable a degree in San Francisco, as alluded to under the head of *Roadways*. A desire to move along at a high rate of speed seems to have taken firm hold of every one who can afford to ride or drive at all, so that it is with difficulty that the very lenient rules on this point, which your Honorable Body has seen fit to establish, for the regulation of the use of the present roads at the Park, can be enforced. And as the convertion of the drives of a finished park into a course, where every person who happened to be behind a fast horse should be at liberty to race with his neighbor, would totally defeat the principal aim and object of Park improvement, it seems expedient, as it is but just, when we consider that a large proportion of the frequenters of the Park for some time to come will be of those who approach it by private conveyance, that some provision be made for the gratification of their passion for fast driving.

The construction of a mile track, of the usual form of race courses, well sheltered from the winds, and overlooked by spacious carriage stands, though an element by no means in accord with the pure theory of Park Improvement, would meet with much favor by a large class of Park frequenters. There is not, however, a suitable location for such a course, and it only remains to satisfy this demand by constructing some one of the contemplated drives of the Park of suitable material, and set it aside for a track, where no restrictive rules as to speed would be enforced.

In the plan herewith submitted for the improvement of the Great Highway, it will be observed that there are two parallel roads, of 50 and 80 feet in width respectively; the narrow one being upon the top of the embankment proposed to check the inroad of the sand, the wide drive, at a lower level, within, and sheltered by the embankment and a heavy growth of trees upon its eastern slope. This drive will be over two miles and a half long, perfectly level, and eighty feet wide. There could be no impropriety in making this the scene of fast driving, and surely no better opportunity for the display than it would afford could be desired. In the neighborhood of this course must be a house of entertainment, and shelter for horses. This establishment is located in the plan, near the Highway, on the northern drive of the Park, at the head of the large lake, and designated the "Hostelry."

To recapitulate. In the adaptation of the plan of the Park to the requirements of its probable frequenters, I have recognized four ruling classes of taste, and proposed to improve certain quarters in such manner as will offer every opportunity for their gratification, while yet weaving all into a harmonious whole—a modern City Park —and in so doing I have planned four houses of refreshment and rest.

It is to be remembered that this classification is not intended to apply any restriction to the free use of every portion of the Park and its appurtenances, by all persons who will conform to the regulations for its government.

Every visitor to the grounds is expected to find some element of attraction in each of the proposed improvements, and will be free to choose a tarrying place.

I trust that enough has been said to illustrate the character of, and necessity for these, the principal features in the plan submitted. It is quite evident that a greater amount of shelter will be required during the summer months in this climate, than in most others where large Parks have been built, which is the best reason for the number of structures contemplated. The refreshment houses should be built by the Park management, and rented to the highest bidder therefor, who will conform to proper restrictions. Too much cannot be exercised in the planning and regulation of these features, which should be such as to insure the greatest attainable measure of moral, sanitary and pleasurable use—results which could not be expected were their erection and maintenance left to private enterprise upon lands adjacent to the Park.

* * * * * * * * * * * *

All of which is respectfully submitted,

Wm. Hammond Hall,
Landscape Engineer.

EXPLANATION OF MAP.

[Abbreviated from continuation of the foregoing report.]

A	Manor House. (See page 79.)
B	Park Offices.
C	Dairy. (See page 80.)
D	Café. (See page 82.)
E	Hostelry. (See page 82.)
F	Superintendent's House.
G	Quarters for Employés.
H	Park Lodge.
J	Ornamental Fountain.
K	Children's Play-house.
L	Rustic Shelter.
M	Pavilion.
N	Carriage Step, with Shelter.
a	Archway for Foot-path under Road.
b	Archway for traffic road under park drive.

FULTON
ST.
D
ST.
AV.
GROVE
HAYES
FELL
OAK
PAGE
HAIGHT
WALLER
KATE
ST.
FREDERICK
STREET
STANYAN
SCHRADER
CLAYTON
ASHBURY
AVENUE
MASONIC
LOTT
LYON
BAKER
BRODERICK
STREET
AVENUE DRIVE
MAIN ENTRANCE DRIVE
PICNIC GROUND
NORTH RIDGE ROAD
Plateau
THE VALLEY
GROTTO
TUNNEL
NORTHERN DRIVE
RIDE
ROAD No 1
MAIN DRIVE
LAKE
TERRACE
THE APPROACH
PARK
LAWN
CHILDREN'S QUARTER
SOUTHERN DRIVE
TRANSVERSE
THE TURN
THE GREEN
PARK
LAKE
LAKE
ROAD
STABLE
DRIVE
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ST.
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3rd
2nd
1st
BUENA VISTA
PARK

APPENDIX D.

PARK COMMISSIONERS' ORDINANCES.

No. 1.

Adopted October 27th, 1870.

The Park Commissioners do ordain as follows:

No person shall trespass on the grounds within the limits of the Avenue, Golden Gate and Buena Vista Parks.

No person shall cut or remove from said Avenue and Parks, any trees, shrubs, stakes, wood, turf, grass or soil.

It shall be the duty of the custodian of the Park to arrest all trespassers, and all parties violating this Ordinance.

S. F. Butterworth,
D. W. Connely,
Chas. F. McDermot,
Park Commissioners.

A. J. Moulder, Sec'y.

No. 2.

An Ordinance to provide for the regulation and government of the Avenue and Public Parks in the City and County of San Francisco, in charge of the Park Commissioners.

Section 1.—The objects of this Ordinance are those grounds which are known as Golden Gate and Buena Vista Parks, and the Avenue leading to said Golden Gate Park, all particularly described in the first section of an Act of the Legislature of the State of California, entitled " An Act to provide for the improvement of Public Parks in the city of San Francisco," approved April 4th, 1870.

Sec. 2.—Within the said grounds all persons are hereby forbidden.

1. To turn in or let loose any cattle, horses, goats, sheep or swine.

2. To carry, and especially to discharge firearms.

3. To cut, break or in any way injure or deface any trees, shrubs, plants, buildings, fences or structures of any kind.

4. To bathe in, or otherwise pollute the waters of any pond, lake or pool.

5. To chase, set snares for, catch or destroy any rabbits, quails or other wild quadrupeds or birds.

6. To make or kindle a fire of any kind.

7. To camp, lodge or tarry over night.

8. To ride or drive any horse or other animal, with vehicle or without, elsewhere than on the roads or drives for such purposes provided.

9. To indulge in riotous, boistorous or indecent conduct or language.

10. To drive or ride at a furious speed.

Sec. 3.—No dray, truck, wagon, cart or other vehicle carrying, or if not carrying, employed regularly in carrying goods, merchandise, manure, soil or other articles, shall be allowed to travel upon the drives of said avenue for any other purpose than to cross immediately at the regular street intersections, nor upon the drives of the said Parks. For the present the road now and heretofore commonly traveled to and from "The Central Macadamised Toll Road," is excepted from this rule. But all such vehicles shall be driven over the least worked portion of such excepted road as directed by the Superintendent or any of the Park police officers hereinafter mentioned, unless compelled to turn out in obedience to the "rule of the road" as hereinafter laid down.

The provisions of this subdivision shall also apply to light vehicles regularly driven for business purposes between the country beyond the Parks and the city.

Sec. 4.—The rule of the road for equestrians or vehicles meeting upon the Avenue or Park drives shall be: PASS TO THE RIGHT.

Sec. 5.—There is hereby established a Pound, to be located within the Park limits, for the impounding of the animals mentioned in the first subdivision of section two of this ordinance, and of all strays found trespassing upon said grounds. All such animals shall be driven or carried to the Pound and there kept enclosed at a charge to their owners at the rate of one dollar per day, or fraction of a day, for each animal so impounded. No animal thus in custody shall be released except on proof of property and on production of a receipt signed by the Secretary of the Board of Park Commissioners, countersigned by the Park Superintendent.

If unclaimed for three days, all such animals shall be impounded in the City Pound.

Sec. 6.—All moneys accruing from the Pound charges aforesaid, and also from fines collected from offenders against any of the provisions of this Ordinance, shall be placed in the "Park Improvement Fund," and duly accounted for.

Sec. 7.—1. When the number of participants in any picnic or other organized party about to enter these grounds will exceed ten persons, they, or one of them, shall communicate their intention to the keeper of the gateway at which they enter, or to the keeper of the Stanyan street entrance, pending the appointment of keepers for the other gates.

2. Any company, society or organization of any kind, being desirous of resorting to these grounds in a body, the number of individuals in which will exceed twenty-five, for the purpose of picnicing; any military or other organized company desirous of parading within the same; any Base Ball, Cricket or sporting Club desirous of using the grounds set aside for their peculiar purposes, shall, at least one day prior to the proposed date of the excursion, report, or cause to be reported, such intention to the Secretary of the Park Commissioners, or the Superintendent of the Park and Avenue.

3. All waste material, scraps, litter, or rubbish of any kind brought upon these grounds by such picnic or other parties, shall be promptly collected and removed by them or their employés. In the event of the non-observance of this regulation, the actual cost of thoroughly performing the necessary duty by the Park force shall be charged, and a bill for the same be presented to the representatives of the organization so offending.

4. The representatives of any such organized party, which shall have resorted to these grounds, will be held responsible for the damage done through any transgression of these ordinances by any member of the same, when the offending individual in person can not be identified.

Sec. 8.—The Superintendent of the Parks and Avenue is hereby instructed to enforce and cause to be enforced the provisions of this Ordinance.

Sec. 9.—Power and authority are hereby given to the Park-Keeper, the Head Gardener, the Foreman and the Foreman Teamster, to arrest and detain and deliver to the proper authorities, or in their discretion eject from the grounds, all persons wilfully or knowingly offending against the provisions of this ordinance, or any other ordinance hereafter to be passed by said Board for the regulation, use and government of said Parks and Avenue.

Sec. 10.—The Superintendent is hereby clothed with the powers enumerated in Section 9 of this ordinance.

Sec. 11.—Whenever it may be necessary to appoint assistant-keepers, there shall be delivered to each of them a certificate of appointment, signed by a majority of said Board, sealed and attested by the Secretary. Said assistant-keepers shall possess all the powers enumerated in Section 9 of this ordinance, but shall exercise the same under the direction of the Superintendent, and report to him forthwith any action which they may take under the same.

Sec. 12.—The Park Keeper, the Head Gardener, the Foreman Teamster, and such assistant keepers as may be appointed as aforesaid, shall constitute the Park Police, and shall provide themselves with a badge of office consisting of a metallic star, inscribed with the words "Park Police," and the initials of the words indicating their particular office. A roll number shall be added to the initials on the badges of the assistant keepers.

Sec. 13.—The Secretary of said Board shall, within five days after the passage of this ordinance, make and certify in accurate copy of the same and cause the same to be published as required by law for ten days, Sundays excepted, and this ordinance shall take effect fifteen days after its passage.

E. L. Sullivan,
C. F. MacDermot,
C. J. Brenham,
Park Commissioners.

Office of the Park Commissioners, San Francisco, Sept. 30, 1872.

I certify that the foregoing is a true and faithful copy of an ordinance passed by the Board of Park Commissioners on the 24th day of September, 1872, and duly entered in the books of said Board.

J. T. Fleming, Sec'y.

No. 3.

Section 1. The object of this ordinance is that ground known as the Golden Gate Park, as described in the first section of an Act of the Legislature of the State of California, entitled "An Act to provide for the improvement of Public Parks in the City of San Francisco," approved April 4th, 1870.

Sec. 2. All vehicles used regularly for business purposes in hauling materials or produce over the roads in the said Park, shall rest upon tires at least three and one-half (3½) inches wide.

Sec. 3. All trucks or wagons other than those fitted with steel springs, used regularly in transporting heavy loads of material of any description over the said roads, shall rest upon tires at least five (5) inches wide.

Sec. 4. The Secretary of said Board shall, within five days after the passage of this ordinance, make and certify an accurate copy of the same, and cause the same to be published as required by law, for ten days (Sundays excepted), and this ordinance shall take effect fifteen days after its passage.

E. L. Sullivan,
S. F. Butterworth,
C. F. MacDermot,
Park Commissioners.

Office of the Park Commissioners,
San Francisco, May 27th, 1873.

I certify that the foregoing is a true and faithful copy of an ordinance passed by the Board of Park Commissioners on the 23d day of May, 1873, and duly entered in the books of said Board.

J. T. Fleming, Secretary.

APPENDIX E.

LAWS CONCERNING THE IMPROVEMENT OF PUBLIC PARKS IN THE CITY OF SAN FRANCISCO.

THE ORIGINAL ACT.

An Act to provide for the improvement of Public Parks in the City of San Francisco.

The People of the State of California, represented in Senate and Assembly, do enact as follows:

Section 1. The lands designated upon a map of the "Outside Lands" of the City and County of San Francisco, made in pursuance of Order Number Eight Hundred, by the word "Park," to wit: extending from Stanyan street on the east, to the Pacific Ocean, is hereby designated and shall be known as the "Golden Gate Park," and the other parcel of land fronting on Haight street, and also marked "Park," is hereby designated and shall be known as "Buena Vista Park;" and also the land marked on said map "Avenue," extending from Baker street westward until it crosses Stanyan street, shall be and remain public parks of said city and county, and shall be improved as such by the Commissioners hereinafter mentioned, and their successors.

Sec. 2. The said parks and avenue shall be under the exclusive control and management of a board of three Commissioners, who are hereby designated as "Park Commissioners." Two members shall constitute a quorum for the transaction of business, but no money shall be expended or contract entered into, authorizing the expenditure of money, without the approval of the Mayor of said city, and a majority of said Board.

Sec. 3. The Governor of the State of California is hereby authorized and directed within thirty days after the passage of this

Act, to appoint three Commissioners, who shall hold their office for four years, and who shall receive no compensation for their services. In case of a vacancy, the same shall be filled by the remaining members of the Board for the residue of the term then vacant, and all vacancies occasioned by the expiration of terms of office, or neglect, or incapacity of qualification, shall be filled by the Governor aforesaid. Each of said Commissioners shall be a freeholder and resident of said city and county.

Sec. 4. The said Board shall have the full and exclusive power to govern, manage and direct the said parks and avenue; to lay out, regulate and improve the same; to pass ordinances for the regulation and government of the same; to appoint such engineers, surveyors, clerks, and other officers as may be necessary; to prescribe and define their respective duties and authority; to fix the amount of their compensation, and to have the management of the funds provided for the improvement thereof.

Sec. 5. It shall be a felony for any Commissioner, directly or indirectly, to be interested in any contract or work of any kind whatever connected with either of said Parks or Avenue, and it shall be the duty of any Commissioner or other person who may have any knowledge or information of the violation of this provision, forthwith to report the same to the Governor, who shall hear the allegations in regard thereto, and if, after such hearing, he shall be satisfied of the truth thereof, he shall immediately remove such Commissioner thus offending. The Governor shall issue a commission to each of the Commissioners appointed by him, who shall, within twenty days after the receipt thereof, take and subscribe the oath of office prescribed by law.

Sec. 6. The said Board shall *semi-annually, and on the second Monday in January, in each year, make to the Legislature of the State, and to the Board of Supervisors of said city and county annually, and on the second Monday of January in each year, a full report of their proceedings, and a detailed statement of all their receipts and expenditures.

Sec. 7. It shall be lawful for the said Commissioners to let any portion of said grounds, from time to time, until the same shall be required for the improvement of said Parks, but no lease shall extend beyond three years from the date thereof. All moneys real-

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* Biennially ?

ized thereby shall be devoted to the improvement of said Parks and Avenue.

Sec. 8. During the year next ensuing their appointment, the said Commissioners may expend upon said Parks and Avenue, the sum of one hundred thousand dollars, and no more, and during the second year the sum of seventy-five thousand dollars, and annually thereafter for the next three years, the sum of fifty thousand dollars per annum.

Sec. 9. The said Commissioners shall, from time to time, create and issue bonds in sums of not less than three hundred dollars nor more than one thousand dolllars, which bonds shall not exceed in amount two hundred and twenty-five thousand dollars, and shall be payable fifty years from their date or sooner, if the Legislature shall hereafter so provide, and may sell the same at not less than their par value to create a fund, to be called "The Park Improvement Fund." Such bonds and the interest thereon shall be payable in gold coin. Such interest shall be paid semi-annually, at the office of the Treasurer of said city and county, and shall not bear interest at a rate exceeding six per cent. per annum. The said Parks and Avenue are hereby pledged as security for the redemption of said bonds.

Sec. 10. Said Commissioners shall advertise for proposals for such bonds for at least sixty days before issuing the same, and shall issue the same to the best and highest bidder, but no bid under par shall be accepted.

Sec. 11. For the payment of the interest of the said bonds, the Board of Supervisors of said city and county shall order and cause to be raised by tax on the estate, real and personal, subject to taxation, according to law, in said city and county, and to be collected in addition to the ordinary taxes, yearly, and every year, sufficient money to pay the interest annually accruing to the bonds then issued.

Sec. 12. The money raised by sale of such bonds shall be deposited with some one or more of the savings or banking institutions in said city and county, and such institution, bank or banks with which the same may be deposited, shall allow interest upon such deposits as may be agreed upon with said Board, and shall open and keep an account with said Board. No money shall be drawn from said fund, except upon a warrant signed by a majority of the Commissioners and the Mayor.

Sec. 13. It shall be lawful for said Board of Commissioners to pass such ordinances as they may deem necessary, for the regulation, use and government of said Parks and Avenue, not inconsistent with the laws of the State of California. Said ordinances shall, within five days after their passage, be published for ten days (Sundays excepted), in a daily newspaper published in said city and county, to be selected by said Commissioners.

Sec. 14. All persons offending against any such ordinance shall be deemed guilty of a misdemeanor, and be punished on conviction in the Police Court of said city and county.

Sec. 15. This Act shall take effect immediately.

Approved April 4th, 1870.

THE AMENDATORY ACT.

An Act amendatory of and supplemental to "An Act to provide for the improvement of Public Parks in the City of San Francisco, approved 4th of April, 1870."

The People of the State of California, represented in Senate and Assembly, do enact as follows:

Section 1. Section 9 of said Act is hereby amended so as to read as follows: Section 9. The said Commissioners shall, from time to time, create and issue bonds which shall be countersigned by the Mayor of said city and county, with the corporate seal affixed, in sums of not less than three hundred dollars nor more than one thousand dollars, which bonds shall not exceed in the aggregate the sum of two hundred and twenty-five thousand dollars, and shall be payable twenty-five years from their date; and may sell or dispose of the same at not less than ninety per cent. of their par value, to create a fund to be called "Park Improvement Fund." Such bonds and the interest thereon shall be paid in gold coin. Said interest shall be paid semi-annually, at the office of the Treasurer of said city and county, and said bonds shall bear interest at a rate not exceeding six per cent. per annum. The said Parks and Avenue are hereby pledged as security for the redemption of said bonds. Any balance of the appropriation made for any one year, may be expended in any succeeding year. It shall be lawful for the holder or holders of any bond or bonds heretofore issued under the provisions of the Act to which this Act is amendatory and supplemental, to surrender such bond or bonds with the unpaid coupons thereon, to the auditor of said city and county, and upon such surrender being made, bonds of like denomination to those surrendered, payable as herein provided, with coupons attached, bearing interest at six per cent. per annum, shall be issued and delivered to the person or persons making the surrender aforesaid, and the Auditor shall, in the presence of the Mayor, cancel all bonds and coupons so surrendered in exchange for others, as herein provided.

Sec. 2. Section 10 of said Act is hereby amended so as to read as follows: Section 10. The Park Commissioners shall sell the bonds from time to time, as the money arising therefrom shall be needed for the prosecution of improvements on said Parks; and all moneys arising from sales of bonds shall be paid into the Treasury of the city and county, to the credit of a fund, to be known as the "Park Improvement Fund," and shall only be drawn therefrom upon the order of said Park Coumissioners, or a majority of them, audited by the Auditor of said city and county.

Sec. 3. In order to render said Avenue and Parks of easy access to the citizens of San Francisco, the said Commissioners are hereby authorized and empowered to draw from the said "The Park Improvement Fund," not exceeding the sum of twenty thousand dollars, and expend the same on such of the public streets of the said city leading to said Avenue and Parks, as in the judgment of said Commissioners shall best subserve the public convenience, but the said Commissioners shall not expend any moneys as in this section contemplated, unless the property holders along the line of the streets thus designated and selected by the Commissioners, shall unite with the said Commissioners and contribute an amount equal to that proposed to be expended by the Commissioners, and place the same in the said "The Park Improvement Fund," the whole to be laid out under the direction and supervision of the said Commissioners.

Sec. 4. This Act to take effect from and after its passage.

Approved March 30th, 1872.

THIRD

BIENNIAL REPORT

OF THE

SAN FRANCISCO

PARK COMMISSIONERS.

1874-5.

November 30, 1875.

SAN FRANCISCO.

EDWARD BOSQUI & CO., PRINTERS, CORNER CLAY AND LEIDESDORFF STREETS.

1875.

ERRATA.

Page 22, 11th line from top, read *all* for *no*.
“ 25, bottom line, read 35,882 for 25,882.
“ 26, 6th line from top, read *its* for *their*.
“ 39, 8th line from top, read *cypresses* for *cypress*.
“ 40, 8th line from bottom, read *turf* for *turfs*.
“ 41, 10th line from bottom, read *Enteritis* for *Euteritis*
“ 52, 17th line from top, read —, for *and*, after *maintenance*.

Wm Ham. Hall.

THIRD

BIENNIAL REPORT

OF THE

SAN FRANCISCO

PARK COMMISSIONERS.

December 1st 1875

1874-5.

SAN FRANCISCO.
EDWARD BOSQUI & CO., PRINTERS, CORNER CLAY AND LEIDESDORFF STREETS.
1875.

BOARD OF PARK COMMISSIONERS.

E. L. SULLIVAN.
WM. ALVORD.
LOUIS McLANE.

OFFICERS.

E. L. SULLIVAN, - - -	*President.*
J. T. FLEMING, - - -	*Secretary.*
WM. HAMMOND HALL,	*Engineer and Superintendent.*

OFFICE :—Rooms 22 and 23 on Third Floor, 302 Montgomery Street.

REPORT

OF THE

PARK COMMISSIONERS.

To the Legislature of the State of California:

In their last report to the Legislature of the State of California, the Board of Park Commissioners of the City of San Francisco, in pursuance of their trust, announced the general features of a scheme of operations then entertained. Encouraged by substantial results, and also by the acquiescence and approval of the authorities and the public at large, they have seen no reason to depart from the plans first adopted.

In May last, Mr. S. F. Butterworth, one of the most efficient of the Commissioners, died. He was associated with the Park from its inception, and his loss is deeply felt.

Mr. Louis McLane was elected to fill the vacancy for the unexpired term of Mr. Butterworth on the 29th of July following.

The Board, as now constituted, stands as follows: President, E. L. Sullivan; Commissioners, E. L. Sullivan, William Alvord and Louis McLane.

At the commencement of the biennial period now expiring, there had been received from all sources the sum of $216,603 36, of which $207,399 98 had been expended, leaving a cash balance of $9,203 38.

RECEIPTS.

Since that time the receipts have been as follows:

From sale of bonds (as per Exhibit "B")	$229,662 50
From sale of Lupin seed (as per Exhibit "B")	799 76
From Police Court fines (as per Exhibit "B")	375 00
From Pound fees (as per Exhibit "B")	252 00
From hire of tools, etc. (as per Exhibit "B")	13 00
Total received since last report	$231,102 26
Balance on hand at last report	9,203 38
Total available since last report	$240,305 64

DISBURSEMENTS.

The principal items of expense during the past two years have been the construction of a roadway three miles in length from the eastern portion of the Park westward to the ocean beach; the continuation of the work of reclaiming the sands, and subsequent foresting of the reclaimed portions by plantations of suitable young trees, together with the works necessary for arresting the inroad of sands from the beach, for a mile of its length; the building of a park lodge (keeper's house and office), a large rustic pavilion and several smaller rustic structures, a carpenter shop, store rooms, bell tower and various other structures; the extension of the water distributing pipes, and of the drainage system; the horticultural works of raising and planting trees and shrubs, and formation of limited areas of turf; a considerable amount of grading and shaping about the grounds, and construction of walks; together with the works of maintenance of the Parks and Avenue. The Mountain Lake Park, placed in charge of this Board, by enactment of the last session of the Legislature, has been taken possession of and securely fenced.

The amount expended during the past two years, as shown by Exhibit "B," is $205,877 69, leaving a cash balance on hand of $34,527 95.

Of the $413,177 67 shown by Exhibit "C" as the amount disbursed by this Board since its organization, $389,566 35 is represented by actual work performed upon the grounds in its charge, and material and merchandise employed upon or in such work. This is represented by the three first items of disbursement given in Exhibit "C," less the salary of the Secretary, and includes all works of improvement and maintenance, expense of preliminary surveys, engineering and superintending, and salaries with the exception above mentioned.

The next account under the head of disbursements, viz.: "Street Account," represents an outlay made under authority of legislative enactment to expend moneys from the Park Improvement Fund, for the construction of approaches to the Park at a time when it was almost inaccessible, and the amount was paid for the improvement of streets leading immediately to the eastern end of the Avenue, and the opening of First Avenue, on the north of the Golden Gate Park Reservation.

The heavy item of "Advertising" is in great measure made necessary by compliance with the law in advertising the sale of Park bonds in New York, and publishing the ordinances for the government of the Parks.

"Printing and Lithographing" comprise, as the principal item, the lithographing of Park bonds, together with printing the reports of this Board in pamphlet form, with accompanying maps, as well as all other printing of the necessary blank forms, notices, etc., required in the office, and in the improvement and maintenance of the Park itself.

"Interest" represents the amount paid as such on a temporary loan, which it was necessary to effect for the prosecution of work at the Park and the maintenance thereof, during the interim between the date of its last report to your Honorable Bodies and the passage of the subsequent enactment which placed additional funds at the disposal of this Board.

The other accounts explain themselves.

The amount actually expended upon the Parks, as given above, embracing the items mentioned in general terms, it must be remembered, also includes the expense of fencing the Buena Vista and Mountain Lake Parks, and making large plantations on the former reservation, so that, deducting the expense of the preliminary topographical survey of Golden Gate Park, and the amount of the items of expense upon the other two reservations, the cost of improvement and maintenance of the Park, as seen by ordinary visitors, has been, during the past four and a half years—since the work commenced—about $379,814 35. Of this, about $72,000 is chargeable to maintenance; and about $10,000 is invested in work-horses, rolling-stock, heavy implements, tools, office furniture, instruments, and other needful incidentals, in good order for future use; so that the total cost of improving Golden Gate Park and Avenue, including all plans therefor, superintendence of the work and reclamation of the sands, is, to date hereof, $297,814 35.

In an age whose demands for ornamental public grounds amount to a passion, it is scarcely deemed necessary to refer to former reports or to contemporary literature for information, as to the æsthetic tendencies of Park improvements; but it may be well to remind men of a more utilitarian turn of thought that apparent sacrifices in that direction have invariably proved to be profitable investments for States and Municipalities, The Capitals in Europe, as well as New York, Brooklyn, Philadelphia, Baltimore and other American cities, demonstrate by their statistics, conformable to those of general history, that from the skillful ornamentation of grounds for popular resort there arises an enhancement of values more than sufficient to pay as an investment.

The question on which this Board may apprehend some division of opinion is the rate of progression which it may be expedient to adopt in future Park construction. Some favor the policy of immediate completion of the contemplated improvements ; others counsel a cautious advance.

It is respectfully submitted that progress has heretofore been too slow to be truly economical. Restraint may in some cases be wasteful. It has been so in the case of the Golden Gate Park. The works commenced, which have met with so much success, for the arresting of the inroad of the sands from the beach on the Great Highway Reservation, and the reclamation of the sands, should be prosecuted with all possible dispatch. The entire area of the sand downs should be covered with a young forest by one simultaneous effort. The portion of the Park now partially improved should be brought to a finished state, so that the present generation may enjoy a foretaste of that from which posterity will reap the full benefit.

No accepted maxim of Political Economy requires that the expense of such improvement should be defrayed wholly by direct immediate taxation.

The benefits are partially immediate, chiefly prospective. In that ratio should the means be procured.

Some two hundred and fifty thousand denizens of San Francisco are now urging the improvement of their Parks ; one million will enjoy their completion and full development twenty years hence. To them the discharge of a debt now incurred will be in the proportion of one to four, if arithmetic alone be consulted ; but there are other factors to the problem, all pointing to the expediency of issuing bonds, as heretofore, for the purpose of permanent improvement ; but for the maintain-ance of the improved portions of the ground, for present use, a light tax should be raised annually.

This Board, therefore, respectfully recommends that the work of improving Golden Gate Park be pushed rapidly forward—that the expense of such improvement be paid for out of funds to be raised, as heretofore, by the sale of bonds—that a separate fund, to be called the Park Maintenance Fund, be established, to be raised by direct tax levy in the usual way, and applied to the keeping in order of the Park for present use.

The Commissioners invite attention to the report of the Engineer, appended hereto. It gives in detail all necessary information regarding the Parks and the progress of the works thereon.

Respectfully submitted.

E. L. Sullivan,
Wm. Alvord,
Louis McLane.

San Francisco,
December 1st, 1875.

PARK FINANCES.

REPORT OF THE SECRETARY.

EXHIBIT "A."

Park Commissioners' Receipts and Disbursements from Organization of Board, May 3rd, 1870, to November 30th, 1873.

RECEIPTS.	
Product of sale of 75 Bonds at $1000 each, at par....... ...	$75,000,00
Product of sale of 75 Bonds of $1.000 each, at 93 cents	69,750.00
Product of sale of 75 Bonds of $1,000 each, 35 at 90 70-100, and 40 at 91 05-100..........	68,165.00
Street Account..................	2,902,86
Interest Account................	396.00
Police Account...........	285.00
Pound Account............... .	104.50
	$216,603.36
Balance cash on hand, November 30th, 1873..................$	9,203.38

DISBURSEMENTS.	
Park Improvements...............	$173,022.76
Surveying and Engineering........	13,368.00
Street Account.................. .	8,973.17
Salary Account.......	5,945.00
Nursery.........................	2,545.79
Office Rent..................... .	1,070.00
Advertising........	1,171.45
Stationery and Printing...........	887.26
General Expenses...	272.50
Office Expenses..................	144.05
Balance cash on hand, November 30th, 1873......................	9,203.38
	$216,603.36

EXHIBIT "B."

Park Commissioners' Receipts and Disbursements from November 30th, 1873, to November 30th, 1875.

RECEIPTS.	
Balance cash on hand, November 30th, 1873..................$	9,203.38
Product of sale of 125 Bonds of $1,000 each, at 91 5-100......	115,062.50
Product of sale of 125 Bonds of $1,000 each; sold 25 at 92 cts., 25 at 91 75-100, and 75 at 91 55-100.....................	114,600.00
Product of sale of 3,076 pounds of Lupine Seed at 26 cents per pound..................	799.76
Police Account..................	375.00
Pound Account..................	252.00
From use of Tools.............	13.00
	$240,305.64
Balance cash on hand, Nov. 30th, 1875........................$	34,527.95

DISBURSEMENTS.	
Park Improvements...............	$190,662.80
Surveying and Engineering........	2,797,00
Salary Account....................	7,450.00
Advertising.......................	1,518,73
Printing and Lithographing........	936.70
Office Rent.......................	840.00
Stationery	366.99
Interest Account	914.97
General Expenses.................	85.00
Office Expenses..................	205.50
Balance cash on hand, Nov. 30th, 1875.........................	34,527.95
	$240,305.64

EXHIBIT "C."

Park Commissioners' Receipts and Disbursements from Organization of Board, May 3d, 1870, to November 30th, 1875.

RECEIPTS.	
Product of sale of 125 Bonds of $1,000 each, at 91 5-100.	$115,062.50
Product of sale of 125 Bonds of $1,000 each; sold 25 at 92 cts., 25 at .91 75-100, and 75 at .91 55-100	114,600.00
Product of sale of 75 Bonds of $1,000 each, at par	75,000.00
Product of sale of 75 Bonds of $1,000 each, at 93 cents	69,750.00
Product of sale of 75 Bonds of $1,000 each; sold 35 at 90 70-100, and 40 at 91 5-100.	68,165.00
Street Account	2,902.86
Park improvements, sale of Lupine Seed and use of tools	812.76
Police Account	660.00
Interest account	396.00
Pound Account	356.50
	$447,705.62
Balance cash on hand, November 30th, 1875	$34,527.95

DISBURSEMENTS.	
Park Improvements	$366,231.35
Surveying and Engineering	16,165.00
Salary Acccount	13,395.00
Street Account	8,973.17
Advertising	2,690.18
Office Rent	1,910 00
Printing and Lithographing	1,641.20
Interest Account	914.97
Stationery	549.75
General Expenses	357.50
Office Expenses	349.55
Balance cash on hand, November 30th, 1875	34,527.95
	$447,705.62

San Francisco, November 30th, 1875.

J. T. FLEMING,
Secretary.

EXHIBIT "D."

Arrests made for violation of Park Ordinances from December 1st, 1873, to December 1st, 1875.

	1873.	1874.
December	1	2
	1874.	1875.
January	0	1
February	5	5
March	0	2
April	0	1
May	1	5
June	0	2
July	1	1
August	0	3
September	1	1
October	0	11
November	2	0
Total	11	34

EXHIBIT "D"—Continued.

CAUSES OF ARREST.

	1873 and '74.	1874 and '75.
Fast driving	1	25
Fast riding		2
Obstructing Park drives	1	
Shooting firearms in Park	7	5
Drunkenness		1
Other offenses	2	1
Total	11	34

EXHIBIT "E."

Tabulated Statement of Visitors to Golden Gate Park, during the year ending November 30th, 1874.

	Carriages.	Double Buggies.	Single Buggies.	Eques-trians.	Pedes-trians.	Total Vehicles.	Total People.
December (1873)	989	865	5,065	1,284	1,093	6,919	23,134
January (1874)	793	694	4,161	1,253	1,143	5,548	19,040
February	981	859	5,032	1,548	1,418	6,872	23,582
March	1,113	974	5,703	1,560	1,476	7,790	26,406
April	1,351	1,174	6,936	1,893	1,681	9,461	31,957
May	1,489	1,302	7,630	2,374	1,799	10,421	35,436
June	1,646	1,439	8,434	2,251	2,533	11,519	39,341
July	1,848	1,617	9,371	2,482	2,465	12,936	43,755
August	1,740	2,320	8,845	2,367	1,927	12,905	43,009
September	2,029	1,921	11,148	1,960	1,705	15,098	48,959
October	1,612	1,681	8,922	1,892	1,065	12,215	39,822
November	3,646	2,142	13,416	3,327	7,227	19,204	70,377
Totals	19,237	16,988	94,663	24,190	25,532	130,888	444,618

EXHIBIT "F."

Tabulated Statement of Visitors to Golden Gate Park, during the year ending November 30th, 1875.

	Carriages.	Double Buggies.	Single Buggies.	Eques-trians.	Pedes-trians.	Total Vehicles.	Total People
December (1874)	1,858	2,181	11,170	2,322	1,546	15,209	49,545
January (1875)..	1,341	1,795	8,041	1,750	1,080	11,177	36,361
February.......	1,956	1,904	9,400	1,993	1,013	13,260	42,786
March..........	1,985	1,798	9,447	2,305	848	13,230	42,843
April.....	1,842	1,763	8,954	2,479	842	12,559	40,998
May............	2,135	1,986	10,687	3,148	1,173	14,808	48,810
June	1,620	1,739	8,658	2,507	1,009	12,017	39,567
July............	1,825	2,054	9,478	3,206	994	13,357	44,271
August.........	1,649	1,815	9,085	3,432	1,214	12,549	42,293
September	1,758	1,785	9,213	3,026	1,051	12,756	42,345
October	2,645	2,382	12,406	3,411	1,536	17,433	57,246
November......	1,121	1,346	6,269	1,709	1,188	8,736	29,105
Totals......	21,735	22,548	112,808	31,288	13,494	157,091	516,170

EXHIBIT "G."

Classification of Weather at the Park.

	Dec. 1st, 1873, to Dec. 1st, 1874.				Dec. 1st, 1874, to Dec. 1st. 1875.			
	Fine and pleasant days.	Cloudy d's, light winds prevailing.	Showery, foggy, cold, or very windy days.	Rainy days.	Fine and pleasant days.	Cloudy d's, light winds prevailing.	Showery, foggy, cold or very windy days.	Rainy days.
December..	12	5	10	4	24	4	3	0
January....	12	6	8	5	14	3	8	6
February ...	15	4	8	1	11	8	9	0
March......	16	8	5	2	17	3	9	2
April.......	18	4	8	0	15	6	9	0
May........	18	4	9	0	17	5	9	0
June.......	15	2	13	0	9	3	17	1
July	15	0	16	0	7	4	20	0
August.....	14	1	16	0	11	5	15	0
September..	18	7	5	0	15	7	8	0
October	12	11	7	1	23	1	7	0
November..	14	7	7	2	9	7	5	9
Totals.....	179	59	112	15	172	56	119	18

EXHIBIT "H."

Table showing number of accidents that happened at the Park. Most all of these mishaps were of a trivial nature.

	Dec. 1, 1873 to Dec. 1, 1874.			Dec. 1, 1874, to Dec. 1, 1875.		
	Saddle Horses.	Vehicles.	Individuals.	Saddle Horses.	Vehicles.	Individuals.
December,	....	....	....	....	....	....
January,	1	2	....	....	3	4
February,	....	2	2	....	3	....
March,	1	....	1	....	2	1
April,	....	....	....	....	1	....
May,	....	2	2	1	7	1
June,	....	1	....	....	1	1
July,	1	....	2	....	2	....
August,	....	1	....	....	4	2
September,	1	1	....	....	....	....
October,	....	5	6	....	1	....
November,	....	6	5	1	....	1
	4	20	18	2	24	10

EXHIBIT "I."

Table showing the number and classification of Animals impounded in Park Pound.

	Dec. 1st, 1873, to Dec. 1st, 1874.					Dec. 1st, 1874, to Dec. 1st, 1875.				
	Horses and mules.	Cattle.	Pigs.	Goats.	Total.	Horses and mules.	Cattle.	Pigs.	Goats.	Total.
December	2	....	....	....	2	7	1	....	....	8
January	1	18	....	....	19	1	9	....	....	10
February	....	16	1	....	17	2	1	....	....	3
March	7	7	2	15	31	4	13	....	...	17
April	....	18	1	....	19	12	6	....	....	18
May	6	12	....	....	18	2	35	....	....	37
June	6	25	....	....	31	1	18	....	....	19
July	9	6	....	....	15	3	21	....	....	24
August	3	5	....	....	8	1	36	....	....	37
September	3	14	....	....	17	2	7	....	.. .	9
October	....	23	....	....	23	3	1	....	....	4
November	9	18	....	....	27	3	14	9	....	26
Total	46	162	4	15	227	41	162	9		212

EXHIBIT "J."

Summarized Statement of the amount of Water used at Golden Gate Park for the Year ending Nov. 30th. 1875.

Month.	Gallons used per month.	Average number of gallons used per day.
December, 1874	228,975	7,386
January. 1875	171,000	5,516
February	436,050	15,573
March	974,925	31,449
April	1,459,425	48,647½
May	1,633,350	52,688
June	1,904,175	63,472
July	1,891,725	61,023½
August	1,756,350	56,656
September	1,875,637	62,521
October	1,450,237	46,782
November	115,950	3,865
Total	13,897,799	

EXHIBIT "K."

Summarized Statement of the Amount of Water used at Golden Gate Park for the year ending Nov. 30, 1874.

Month.	Gallons used.	Average No. of Gallons per day.
December, 1873	193,200	6,200
January, 1874	127,100	4,100
February	94,612	3,379
March	474,300	15,300
April	1,264,830	42,161
May	1,809,375	58,367
June	2,403,975	80,132
July	2,344,725	75,636
August	2,002,747	64,605
September	2,113,252	70,442
October	1,028,025	33,162
November	268,500	8,950
Totals	14,123,641	

REPORT OF THE ENGINEER.

Office of the Engineer to the
Park Commission,
November 30th, 1875.

To the Honorable Board of Park Commissioners:

Gentlemen—

I herewith submit a statement of the present condition and stage of development of the grounds in my care, a review of the works undertaken for their improvement, and of those necessarily prosecuted for their maintenance, during the two years ending with this date, together with an account of the government and use of Golden Gate Park and Avenue.

In presenting this report, I cannot refrain from expressing the hope that the near future has in store a bright prospect for Golden Gate Park. It has been necessary, as it always is at the commencement of an improvement of this kind, to make a considerable outlay of money in preparatory works, the results of which are not apparent to the casual observer, before the real beautifying and adaptation of the grounds to the use of visitors can be undertaken. However much we may advocate the natural style in landscape gardening, and are determined to change as little as possible the native features of a ground to be improved, we nevertheless are obliged to open up its characteristic points and harmonize its incongruities.

We have to fix upon what elements of use are to be provided in the plan; examine each distinctive portion of the ground, and determine to what use it is best adapted ; adjust all general features into an harmonious whole ; and then accomplish the work of improvement in such manner, that each feature of the plan seems just fitted to its place, and every locality suited exactly to the use to which it has been put. All must look perfectly natural after the grounds are ready for occupation ; look, in fact, as though nothing had been done but clear the rubbish from a beautiful natural park, and build a few structures for certain specific uses upon localities which happen to have been just suited for their reception. And yet, we never find grounds so shaped by nature. It is the province of the Engineer and Landscape Architect to adjust the plan to the general contour of the land, and then shape the details of the ground to the requirements of the plan. If the preliminary work is well done, only those who were familiar with the site before it was improved can perceive the changes which have been made in its disposition, and appreciate the amount of labor which has been performed in their accomplishment. In the prosecution of such preliminary work, a great proportion of the moneys which have been placed at your disposal, for Park purposes, has been expended; and the result is, that now a portion of the grounds within the Golden Gate Park Reservation, is in a condition to receive such finishing touches as will make it much more attractive than it hitherto has been. All the work which is now being undertaken and which will be carried forward during the present season, is of a character calculated to produce this finished appearance. The area of turf is being greatly increased; shrubs, flowering and foliage plants, creeping vines and spreading undergrowth, are being introduced; the grouping of trees finished and perfected; ornamental and rustic structures built for the convenience and comfort of visitors, as well as the addition to landscape effect which they afford; and a considerable length of walk and ramble put in a finished state for use during the coming Spring and Summer. Upon this state of things then, I venture the hope that your charge is upon the eve of blooming forth in a role as inviting to the great mass of people as it has hitherto been to those who have enjoyed its roads and drives: about becoming a pleasant and attractive spot for the citizen and his family, in search of a ramble on foot and a quiet retreat whereat to rest; as well as a driving-park for the enjoyment of that pleasurable pastime.

There must be some popular means of communication by rail between the city and these grounds. The unfortunate circumstance, which seems to have retarded the development of the portion of the city in the direction of the Park, and the consequent construction of street railways between it and the settled portion of the city, is without doubt the existence of the range of hills extending in a southeasterly direction from Laurel Hill and Lone Mountain Cemeteries, the elevation caused by which, has to be surmounted at great disadvantage, by reason of the very bad disposition of street lines as now projected. There is a decided hill to be crossed in approaching the valley in which the Park is situated, from the present improved portion of the city, so that street railways must necessarily be operated to disadvantage in making the approach, and thus improvements have been forced southward upon the prolongation of the easier lines of travel, to a distance much greater than that which the Park is from any central point in the city. It is opinion of your engineer that this state of things, as regards the approach to Golden Gate Park, can be greatly improved at very trifling cost, compared to the advantage to be gained, now that the property on the lines is yet unimproved; and I recommend that the matter so far as it concerns the approach to the Park by pleasure travel in private conveyance, receive your early attention, as I understand it is the object of solicitude on the part of the street railway companies who desire to extend their tracks to the Park for the accommodation of their class of traffic. There should undoubtedly be railway communication between the Park and the city at the earliest possible period of time, and the line of travel so located as to be capable of giving good accommodation and affording rapid transit at reasonable rates. It should be really something more than an ordinary street railway line, but should not be allowed to interfere with the grand approach which is needed for private use, by carriage and on foot. This latter should be located on the best attainable grade, improved as a boulevarde, and maintained as a pleasure drive, ride and walk, just as the Park is, so that there may be an approach to the Park—commencing, we may say, at Van Ness Avenue—improved in the same way, and kept in as good order as the Park itself.

It is none too soon to consider this matter. Every city which has improved a large pleasure ground, has found it necessary, sooner or later, to provide suitable approaches thereto; and those which have exercised the foresight to take early action in the premises, have found it the most economical and by far the most satisfactory course. It were futile to expect that any one of the city streets at its present width—sixty-eight and three-fourths feet—can ever be made, an acceptable approach, for there is not one which is located, for the full route, with sufficiently easy gradients. The widening of portions of such streets as are located to form a part of the route; the joining of such parts by opening proper connecting links to an equal width; the adjustment of grades to the best advantage; and final improvement of this Way as a finished avenue for carriage, equestrian and foot travel—are the steps necessary now to give to San Franciscans the benefit of their Park. Above all things, this approach should be kept free from street railway tracks. These should run parallel to it upon the outside, crossing only where necessary.

The simplest and most economical form of boulevarde thus provided, and which might be expected to answer the requirements of the day by which it could be completed, even were the matter taken in hand at once, would necessitate a Way 120 feet in width; of which fifty feet in the middle would be devoted to a drive, fifteen feet on each side to turf, and a double row of trees, and twenty feet outside of this, and on each side, for a foot-walk. Such an approach, commencing at some point on Van Ness Avenue, and extending upon easy gradients, but by no means necessarily upon a straight line, to the entrance of the present avenue of approach to the Park at Baker street, would result in the practical bringing of the Park within reach of every citizen who chose to take a pleasant and agreeable walk, and increase the attractions of the Park to all classes.

ORGANIZATION OF FORCE AND ACCOUNTS.

The scheme of organization, adopted by your Honorable Body, has been carried out, and is found to work well. The three departments, viz: of Park Construction, Park Maintenance, and Horticultural Improvement and Maintenance, have always been sufficiently distinct in their functions to be conducted to most advantage each by a specialist under a general directing head, but circumscribing the province of each; and the establishment of definite relationship, by the rules referred to, has greatly facilitated the conduct of affairs. As an additional step in the management of the force, a system of daily reports has been adopted, by which the heads of departments account daily for each employee in their respective divisions, upon blank forms provided for the purpose, stating the class, division, and sub-division of labor in which employed, and the particular locality or work upon which engaged.

Thus, from these reports, an accurate account of the cost of labor upon each class of work and specific duty or structure is being posted, from which, and the account of the distribution of material and supplies kept by the park-keeper, a detailed statement of the disposition made of the Park improvement fund may be made up.

The general divisions of works in the Park construction department embraces the following headings:

Ways—viz: carriage and equestrian roads, and walks; *Grounds—preparation of*—viz: grading, shaping, soiling, working; *Engineering Works* (*general*)—viz: surface drainage, agricultural drainage, sewerage, water distribution; *Engineering Works* (*special*)—viz: pumping works, archways; *General Works*—viz: fencing, gates, apparatus; *Structures*—viz: lodge and gate houses, stable and barn, shops, store-rooms, nursery buildings, rustic-work buildings, bell-tower, etc. (in all twenty-two separate structures); *Reclamation*—viz: primary plantation, repairing plantation, brush covering, foresting, protection fences; *Re-apportioned Accounts*—viz: compost heaps, hauling manure, stable account; *General Accounts*—viz:

miscellaneous jobs, messenger duty, hauling sundries from town, engineering field work, engineering office work, clerical duty, superintendence.

The classification of work in the general maintenance department is given in the portion of this report which refers especially to the maintenance of the Golden Gate Park and Avenue.

The works of horticultural improvement and maintenance do not admit of so distinct a classification as those of the two other departments. It is difficult to state just when a plantation is brought to such a state that no subsequent work upon it is necessary for its maintenance; for if properly attended to, it is certainly improving all the time. Nevertheless we find that the accounts kept refer especially to the *Nursery*, with its various sub-divisions of work in the propagation of plants ; *Dressing grounds*, or final preparation for planting ; *Planting*, of trees, shrubs, etc.; *Grass*, the plantation and rearing of grass of all descriptions calculated to form a turf ; *Plantation attendance*, including staking, trimming, tieing up, mulching, etc. ; *Plantation watering ; Grass maintenance*, watering and attendance ; *General work*, digging, manuring, hoeing, and similar work in the grounds ; *Foresting*, heavy trimming, and cleaning out of native growth.

The following form will serve as a specimen of that upon which the returns are made.

DAILY REPORT OF THE..FORCE.

....187

Regist'r No.	Time.	Roll No.	OCCUPATION.			
			Location.	Class.	Divis'n.	Subdivision.

Explanation of above table.—Each person is registered when employed. The *register number*, therefore, refers to the position of the individual upon the general register, and the individual is known to the general accounts and pay-roll by his *register number*, which remains unchanged in whatever force he may be engaged. Each department has a monthly roll of individuals employed upon its work during the month, and numbers them from one, forward, irrespective of their register number. The *roll numbers*, therefore, count off the number of employees engaged in any force in any specified month ; change in different months, as transfers are made or the number of employees vary; and are used in making up the daily reports of each force. In the column marked *Time*, is entered an account of the proportion of the day's work performed by each individual in the force, opposite his proper number. *Location*, admits of defining the force, part of the grounds, or specific structure upon which engaged. *Class*, the generic name of work to which the improvement belongs. *Division*, the character of that specific work in its class. *Sub-division*, the means or method of work.

Of course abreviations are used to facilitate posting these reports, so that to make up an account of the exact employment for the day, of each person in a force numbering thirty individuals, however varied the work performed, need not take more than five minutes of time, or consume more than one cent's worth of paper and ink.

PRESENT CONDITION OF THE PARKS.

ROADS AND WALKS.

Northern Drive.— The building of this road has constituted the principal item of expense classed under the above general heading. Its construction was prosecuted under peculiar difficulties at times, and its successful completion and subsequent maintenance free from drift sand, are striking proofs of the efficacy of the system of reclamation of the sands, which has been pursued. The Northern Drive extends from a point nearly opposite Sixth Avenue Entrance on the northern line of the Park, westerly, upon a general route which adheres closely to the configuration of the topography, and keeps within the northern half of the reservation, to the Ocean Beach. It is built through the middle of what was, at the time of its commencement, the great San Francisco Sand Drift, intact, for its entire length, about three miles.

It was commenced in December, 1873, and completed in June, 1874, having taken within a few days of six months in its construction. Simultaneous with the grading of a good portion of this roadway, during the months of December, 1874, and January, 1875, the work of sowing upon the adjacent sands the seeds destined for their reclamation was carried on, so that, though the storms of the two months named above, repeatedly interfered with the road construction, at times, within a single night covering and obliterating with drifted sand all traces of work performed on the day previous, the vegetation thus produced, by the middle of February, became almost a complete protection to the road, by holding, and binding the surrounding sands, even while under the action of severe storms. At one point, near the beach, where the construction of the road was prosecuted too late in the season to admit of its banks being re-sown with seeds after the grading was completed, it became necessary to protect it during the summer by means of a brush fence, which arrested the sand drift. With this exception, and that of the work of spreading a thin coat of clay over the immediate slope of the road bank for a few feet in width, no other means of protection have been found necessary, and the road has remained open and free from drift-sand to this day.

At a point about one-third of the distance from its eastern extremity, the Northern Drive encounters the rocky hill which extends in a northwesterly direction from Strawberry Hill, designated in former reports, as the Great Transverse Ridge, which separates the East from the West Park, as it will be some day. It is designed to carry the Drive through this ridge by means of a heavy cutting at a low point, and thus render its passage imperceptible, so far as inclination in the roadway is concerned. From this cut, all the clay and a great portion of the rock used in the construction of the road was obtained; but the macadamizing material, being of an inferior-quality, the cut had to be abandoned as a quarry, and material obtained for the road surface from the top of the ridge, so that it was not completed when the road each side of it was finished. A side road over the hill was then built to accommodate immediate requirements, which it does very well, leaving the surplus material in the big cut to be quarried when it shall be needed in the construction of other roads, projected in that portion of the reservation, for which purpose it will do very well, when applied, as it was used on the Northern Drive, simply as a primary layer of the surfacing.

The short piece of road over this ridge is 28 feet wide: with this exception, the Northern Drive varies from 36 to 46 feet in width, and is 15,571 feet, or within 269 feet of 3 miles, in length. The work of its construction embraced 88,350 cubic yards of excavation and embankment, the handling of 2,812 cubic yards of clay, used as a sub-covering of the road and coating for the adjacent banks, the quarrying and transportation of 21,623 cubic yards of rock used in macadamizing. Its cost was $34,167 62 over all, (except the short piece of protection fence afterwards built.) $2 19 per linear foot, of roadway as built, or five and nine-tenths cents per square foot of surface of roadway graded, macadamized and rolled, including cost of sloping banks, and dressing them with clay; one stretch of roadway, west from the quarry, being upwards of two miles in length; all of which was macadamized from its eastern end.

Roadways.— The amount of roadway constructed and in use, upon Golden Gate Park and Avenue, is as follows:

	Length.	*Width.*	*Sq. Ft.*
Avenue,........	5,808	40 to 90 ft.	355,628
Park,..	14,503	32 to 85 ft.	666,090
Northern Drive,	15,571	36 to 46 ft.	579,112
Total..........	25,882		1,600,830

There have been, as yet, no special roads for the use of equestrians constructed.

Walks.— About 10,000 linear feet of walks have been graded and macadamized in the Park, of which somewhat less than half is fully surfaced; while the remainder requires only a thin layer of screened rock for their completion. There are 10,700 lin. ft. of walk graded, ready for macadamizing in the Avenue. This, with the 10,600 ft. macadamized in the Park, and about 2,500 ft. more now under construction, makes 23,800 linear ft., or somewhat over four miles of walk, which may be placed in serviceable condition at a reasonable expense during the approaching year. This work cannot be completed, however, until the grounds immediately adjacent are properly cultivated, and the finish work of plantation completed, which will require a considerable outlay, for the necessary soil, compost, drainage, water pipe system, etc., as well as for the work of plantation itself. Thus does one move so depend upon another, in the course of Park construction, that neither can be made at all, much less to advantage, without a forward step by the other; and thus have we to leave unfinished work, upon which money has been expended—prosecuted so far as a necessary accompaniment of something else which was in hand — in a condition by no means adapted to its ultimate purpose, yielding no return for the outlay already made upon it, offending the eye of taste, and constantly suffering from exposure.

PREPARATION OF GROUNDS.

It is well to bear in mind the exact character of the soils with which we have to deal. Commencing at the west end of the Reservation, there is the fresh sea sand, but a short time ago loosely drifted and moved by every blast, now held generally by a sparse, primitive growth of vegetation, propagated for its reclamation. The line of permanent moisture is within 18 inches of the surface of these sands over a greater portion of their area, which, with their loose character, enabling young plants to send their roots rapidly down, precludes the necessity for any preparation of the soil previous to setting out suitable trees and shrubs. At the eastern end of the Reservation, we have the same sand, in the form of an old drift, blown up probably some ages ago, which has been all covered with a dense growth of the live oak and other native bushes. Through this old drift, at certain localities, appears the country rock — the red and gray serpentinoid, used for our road building — in the form of nodules or humps, dignified by the name of hills, and a yellow, compact, sandy clay, which, with the rock spoken of, underlies the whole country. The sands of this old drift do not retain the moisture so near the surface by from 2 to 3 feet, as those of the new; probably because they being spread over the underlaying clay and rock in a comparatively thin layer, have not the depth of storage room for the surplus moisture of winter to reinforce them during the dry season, which the outer drift has. Upon this portion of the grounds, too, the character of the improvement necessitates the plantation of other than mere sand plants. For these reasons, the soil of the eastern portion of the grounds, wherever of this sandy nature, has to be treated so as to aerate it by digging, enrich it, and render it more retentive of moisture wherever any specific plantation is to be made. The portions of ground presenting themselves as the banks of clay spoken of, are the hardest to deal with. This clay is close, compact almost as granite, requiring heavy blows of the pick to quarry it from a perpendicular bank, even when soaked by the rains of winter; it presents the most cheerless prospect for vegetation, and is in reality as unproductive by itself as a brick pavement. Fortunately, there is but a limited area of this kind of land, for the expense of trenching, sub-draining, lightening it with sand, and enriching it with manure, would soon make sad havoc with the Park Improvement Fund, were the area very great. There are about four acres requiring such treatment in Golden Gate Park, the expense of improving which, when complete, will be at least five times as great as that of any other specific locality of an equal area upon the Reservation. Could this fact have been properly appreciated, much idle talk concerning the adaptability of a certain tract — lying some distance north of the present Reservation, and which is nearly all of this clay formation — for improvement as a Park, might have been saved.

Grading and Shaping.— The principal items of expense under these heads are—the completion of grading in the Picnic Grounds ; the grading and shaping of the grounds adjacent to the Lodge and Cypress Avenue; the final shaping of the piece north of the Main Entrance Drive; and the grading in the extension of the Nursery plats. In addition to these, very many small jobs of both grading and shaping, have been prosecuted at times, at various points through the grounds.

Soiling and Working.— At the date of my last general communication, two years since, the Lawn had been in great part graded, and had received a sub-covering of the clay heretofore spoken of, which was to be ploughed in with the sand below, and then receive a layer of soil, upon which the desired grass sod was to be propagated. Hauling this soil has constituted a principal item under this head. It was brought from the hillside, without the Park limits, half a mile south of the Nursery. About 4,000 cubic yards were thus hauled, and the space covered is 18,000 sq. yds. in area. It is now being thoroughly ploughed and harrowed, after which it will be shaped and seeded to grass.

Shaping and working of the grounds north of the Entrance Drive, constitutes another principal item under this heading. This tract was so completely overgrown with sorrel, that a most thorough working has been necessary to eradicate it even to a degree. The spaces between the groups of trees are designed for a sod of Bermuda grass, the only grass which is at all likely to overcome the sorrel weed.

Working the grounds about the Lodge has constituted another principal item under this head. Here is the clay bed referred to. So far as worked, it has been trenched and underdrained, and the soil lightened and enriched; there being now a fine growth of plants and grass upon nearly two acres of it.

Grading in the Nursery Valley has added about one-fourth of an acre to its available area, which has been covered with the necessary clay, manure and soil for nursery purposes.

It has become somewhat the fashion to measure the progress of the Park by the extent of roadway constructed and the number of trees set out in the grounds ; and it is natural that there should be a desire to push forward these works which show so well for themselves ; but the fact must not be overlooked that neither trees nor roads, nor yet the two combined, constitute a Park. Trees are but one class of embellishments of the grounds, and roadways are the paths provided upon which to travel in viewing these grounds. The effect produced by a group or plantation of trees depends upon the grading and shaping of the grounds for their reception, as well as the disposition of the trees themselves. Therefore, we cannot force the *plantation of the grounds* ahead of the works of *preparation* and the necessary accompaning *general engineering works.* As well might we expect to succeed in producing a proper effect by painting a house before it were put together, or rearing the superstructure before the foundation were laid. For similar reasons, it is injudicious to extend the amount of roadway at Golden Gate Park beyond its present limit, until very much of the grounds contiguous to that already constructed be properly shaped and in a high state of cultivation. The roads are intended to travel upon in looking at the Park ; then why continue their construction when there is so great a length of them already built, along whose borders there is as yet no Park to look at? Their building must necessarily slightly precede other works of improvement, because the disarrangement of the ground's surface in their construction is too great to admit of leaving them until afterwards ; but the work of shaping the grounds — the real frame and substance of the Park — and the accompanying engineering works, should keep pace with their extension, and this be followed up by the placing of embellishments such as tree plantations afford. It is safe to say, that were the grounds in Golden Gate Park in a finished state, the roads would seem twice as great in extent ; a drive upon them would be rendered much more agreeable by combining the pleasure of sight-seeing with that of locomotion, and there would be a constant desire to retrace one's steps and view from different points the objects and combinations of objects presented to view. This shaping of the grounds, then, is a most important department of work, though it does show less result to the unthinking mind than that of plantation and road construction, and must be carried forward in its place.

DRAINAGE.

In a former communication, the matter of drainage was considered at length ; the necessity for a thorough system, and substantial work in its construction being pointed out. During the past two years, some excellent work of the kind has been done in the improvement of the grounds about the Lodge and Cypress Avenue, the soils of which were in character the most impervious and retentive clays.

SURFACE DRAINAGE.

Road-side gutter, 370 linear feet, 2 feet in width—(stone) 6 to 8 inches deep ; silt basins (brick), 15 in number—smallest 10 x 14, largest 36 x 30 inches ; sink holes, 4 in number, 5 in. inlets.

DRAIN PIPE PURCHASED AND LAID.

Size.	Description.	No of feet purchased.	No. of feet on hand.	No. of feet laid.
2 inch	Drain tile	396	....	396
3 “	Iron stone pipe	538	36	502
4 “	“ “ “	372	90	282
5 “	“ “ “	298	188	110
6 “	“ “ “	208	74	134
7 “	“ “ “	292	4	288
12 “	“ “ “	4	4	....
		2,108	396	1,712

TOTAL LENGTH OF DRAINS LAID.

Rock drain, 2,830 feet ; wooden drain, 8 x 10 inches, 5,998 feet ; drain tile, 2 inch, 396 feet ; iron stone-drain pipe, 3 to 7 inch, 1,316 feet ; total length, 10,540 feet.

CONSTRUCTION OF GUTTER.

Where the grading and shaping of the grounds can be so performed as to drain the surface water immediately away from the roads, which will be the case throughout the greater portion of the Park grounds, no expensive stone side gutters will be constructed, as a good turf edging, flush with the road surface at the side, and sloping from it, is sufficient to prevent washing and to carry the surface water back under the shrubbery, where it may be allowed to soak away, or dropped into under drains through suitable gratings. Where, for any considerable distance, the adjacent grounds slope towards the roadway, particularly if the soil be of clay or intermixed with clay and loam, rendering it less permeable than the sand, and preventing the rapid absorption of surface water, and more particularly if the grade of the roadway be considerable, side gutters of stone must be provided, with silt basins and gratings at intervals, and underdrains to carry off the surplus water. Thus far but 370 linear feet of this side gutter has been built, and that along the southern side of the main entrance drive, adjacent to the Lodge grounds. This gutter is 2 feet wide, built of granite blocks, 5 to 7 inches deep, 6 to 10 inches long, and 3 to 4 inches thick. It was built after the roadway was constructed and in use, when the adjacent grounds were shaped, and although the ground was well rammed over the pipe laid below it, there has been a sinking of the gutter below the road level. Here is another instance of the bad economy of a piecemeal policy of construction. Could the ground have been shaped, drains laid, and gutter made at the time the roadway was built, in 1872, it would have cost less for the gutter, saved much wash to the road in the meantime, and withall have been a better job. From 12,000 to 14,000 linear feet of this gutter will be required in the finished portion of the Park and Avenue. Upon the steeper portions of the main walks, where not drained by adjacent grounds, and at the more prominent points, it is designed to place rough stone edging, consisting of a line of granite blocks, of the size used for gutters, set on edge along the dividing line between the walk and bed. About 500 linear feet of this edging has been set in the grounds adjacent to the Lodge.

SILT BASINS AND SINK HOLES.

At suitable intervals along the line of side gutters and walk edgings, silt basins, of brick laid in cement, are to be placed. These vary in size, from a rectangular hole, 10 x 14 inches in area and 3 to 4 feet deep, to an oval basin, 30 x 36 inches in area and 4 to 5 feet deep. Over these basins, iron gratings, supported by frames of cast iron resting upon the cover of the basins, of shape suited to that of the gutter, or walk, are placed, through which the surface water is received. Of the large basins, 4 were constructed on the line of the gutter when built, and 11 of the smaller sizes about the walks adjacent to the Lodge.

DRAIN PIPE AND TILE.

Most of the iron-stone drainpipe laid has been made to serve the double purpose of carrying off the surface drainage which found its way into the silt basins, and the sub-drainage brought out by the drain tile. This can only be done, however, in cases where the ground slopes well up from the main drain, which, fortunately, is the case upon most of the area requiring sub-drainage.

It is much to be regretted that a system of sewerage has not yet been fixed for this portion of the city, for the problem of Park drainage is so intimately connected with that of the district in which it lies, that it is impossible to perfect a satisfactory plan in the present uncertain state of city work adjacent.

SEWERAGE.

The earth closet system, adopted at the Park, is found to work admirably. Not only is the great expense of a system of pipes for sewerage purposes, separate from the drainage system, thereby saved, but the refuse, now preserved in dry earth, which would otherwise be lost or handled with difficulty, is valuable as a component part of the fertilizing compost, constantly in process of formation for use upon the grounds. The closets are self-acting in the deposit of the desiccating charge of dry earth, and free from all the objections which have usually been urged against the system of earth closets, generally.

WATER WORKS.

During the past two years, all the water used upon Golden Gate Park, except upon the western end of the Northern Drive, has been taken from the mains of the Spring Valley Water Company. For an account of its use I refer you to the portion of this report under the head of maintenance, and to exhibits J and K herewith transmitted.

A well with pump, windmill, and tank, for the purpose of providing water with which to sprinkle the Northern Drive beyond the ridge, has been constructed in the large, green valley, about half a mile inland from the ocean beach, and alongside of the drive. The well is bored 177 feet deep, 10 inches in diameter, piped down to the bottom; double piped to the depth of 77 feet, and cemented between outer pipe and lining to keep out running sand.

The pump and mill have a capacity of 2,000 gallons per hour, which is lifted through a 2-inch pipe into a 20,000 gallon tank.

This supply will be amply sufficient to sprinkle the roadways west of the great ridge.

The steam pump, in the eastern portion of the Park, has not been in service during the past two years, but is kept in working order, and ready for use, should it at any time be required.

The distributing works, in the East Park and Avenue, have been extended as absolutely needed during the past two years' in directions where but small-sized pipe was required; thus keeping the cost of this branch of improvement at a minimum. During the approaching spring, it will be necessary, however, to lay large-sized pipe—4, 5, and 6 inch—to the extent of four or five thousand feet, as well as five to seven thousand feet, varying in size from 1¼ to 3 inch, with the accompanying gates, valves, hydrants and hose bibbs, in order to water the plantations, now being made, to advantage. The extensions spoken of will be principally towards and throughout the picnic grounds and in the lawn valley.

WATER PIPE PURCHASED AND LAID.

Size.	Description.	No. of feet purchased.	No. of feet on hand.	No. of feet laid.
4½ inch........	Wt. iron, riveted pipe.	7,254¼	...	7,254¼
3 "	" " blk. gas "	765½	....	765½
2½ "	" " " "	530	41	489
2 "	" " " "	153½	48½	105
2 "	" " gal." "	4,676	242½	4,433½
1½ "	" " " "	2,798¼	194	2,604¼
1¼ "	" " " "	1,031	101	930
1 "	" " " "	771¼	97	674¼
¾ "	" " " "	50	16½	33½
½ "	" " " "	250	....	250
		18,279¾	740½	17,539¼

Note.—Length given of 4½ inch. pp. includes length of elbows, tees, and reducers laid with it.

WATER GATES, VALVES, HYDRANTS, ETC.

Size.	Description.	Number purchased.	No. on hand.	Number in use.
4½ inch.......	Water Gates.	6	....	6
4 "	Globe Valve.	1	....	1
3 "	Service Cocks and Globe Valves.	3	....	3
2½ "	" " "			
2 "	" " " "	15	2	13
1½ "	" " " "			
1¼ "	Cocks, Valves and Hose Bibbs	87	3	84
1 "	" " " "	29	7	22
⅜ "	Comp. Bibbs	6	4	2

STRUCTURES.

Park Lodge.—Previous to the erection of this building, great inconvenience had been suffered at the Park for want of office room and quarters for the keeper and assistants, whose duty required constant presence upon the grounds. The Lodge has supplied this demand. It is a two-story cottage of wood, upon a brick foundation, of an appropriate style of architecture, containing six rooms. It was built by day labor, at a time when there was, unfortunately, a great demand for carpenters and masons, in the most substantial and careful manner, with the most durable class of inside finish, and cost, including everything connected with it, $3,262.87. Adjacent to the Lodge is a structure in similar style, containing shed-room for two horses and vehicles, store-room, and men's room, wash-room, earth-closets and urinals; these latter for the use of the public as well as for Park employees.

BELL TOWER.—The necessity for a general signal at the regular hours for commencement and cessation of labor each day, led to the erection of this structure and the placing of a large bell therein. It is a highly ornamental wooden tower thirty feet high, octagonal in form, very substantial in construction, resting upon a brick foundation, was built by day labor, and cost $534.72.

RUSTIC HOUSES.—As the most appropriate style in which to construct the shelters, seats, bowers, and retiring-houses, necessary about certain portions of the Park—notably the Picnic Grounds—the rustic or natural log house, tastefully and artistically designed, and very solidly built, has been chosen. Four of these structures are completed. One, a large, open pavilion, 70 x 30 feet, is designed especially for dancing parties, the floor being laid with great care, in a manner rendering it especially adapted for the purpose. Another, a closed structure, is designed as a retiring-room for ladies and children. A third, partially enclosed, is a simple shelter, 24 x 12 feet, containing seats, and commanding a fine view of a portion of the drives. The fourth structure is somewhat similar to the last mentioned, and intended for a similar purpose. Besides these, eight large benches or settees of like character, have been made, and are ready for placing in position, in the spring of the year, when required.

SHOPS, SHEDS, ETC.—The plan heretofore submitted for structures adjacent to the Nursery and Stable Yard, for shops, etc., has been carried out. There is now a very good carpenter shop, plumber shop, large store-room, and two open sheds for storage purposes. The stable has been enlarged to the extent of doubling its capacity, refloored and refitted generally, so that it now contains very convenient and comfortable quarters for twenty horses.

Further improvements of this class are noticed under other headings incidentally.

HORTICULTURAL WORKS.

After the heavy work of grading, preparing and working the soil has been done, the final dressing of the grounds, and their subsequent plantation, is ranked as horticultural work, including of course the raising of plants, etc., for such plantation. This department of Park improvement is now becoming important, as the state of other works admit of its being brought forward. Heretofore the planting has been confined to that of large-growing trees; now the final, ornamental plantations are being made at some localities.

NURSERY.

Each year has proven more and more the wisdom of raising the great mass of plants for Park use at a nursery upon the grounds. It is not only cheaper, when carried on upon a sufficiently large scale, but the condition in which the plants are delivered for plantation is beyond measure superior, so that their success is insured.

The fact of having the stock ready at just such times as it is best to set it out, and the opportunity for observation and experiment with the great number of new plants which it is desirable to introduce, are also advantages to be secured only by the establishment of the Park Nursery. This ground has been extended during the past year so as to add somewhat more than one-fourth of an acre to its area. Additional sheds and frames have been erected, one of the glass-houses fitted with a hot-water coil and stove, for creating bottom heat, by the circulation of heated water through large metal pipes, an arrangement necessary in the propagation of much of the stock.

The following is an account of the trees and shrubs raised at the Park Nursery :

TREES AND SHRUBS RAISED.

Season of 1871–72, planted in Golden Gate Park		1,800
“ “ 1872–73, “ “ “ “ “		16,745
“ “ 1873–74, “ “ “ “ “	15,470	
“ “ “ “ “ “ G. G. P. Sand Dist.	300	
“ “ “ “ “ “ Buena Vista Park	650	
		16,420
“ “ 1874–75, “ “ Buena Vista Park	5,687	
“ “ “ “ “ “ Golden Gate Park	7,934	
“ “ “ “ “ “ G. G. P. Sand Dist.	17,504	
		31,125
Total planted out from Park Nursery. ...		66,090
Given to Public Institutions, season 1874–75 :		
Jefferson Square	449	
Alms House	350	
House of Correction	300	
Industrial School	300	
County Hospital	300	
Mechanics Institute	100	
Total given away		1,799
Sold, season of 1874–75 :		
C. Stagg		90
Total taken out of Park Nursery		67,979
In Nursery, ready for planting season of 1875–76		22,499
Total raised in Park Nursery		90,478

PLANTATIONS.

There is every reason to be more than satisfied with the success of the plantations which have been made upon Golden Gate Park and Avenue. Of the trees set out, the proportion which have failed to live, when watered during the summer, does not exceed five per centum. It was to be expected that a number of these trees would not attain a well formed and robust head of foliage, on account of the heavy winds to which they are subjected at the more exposed points. On this account they have been placed very close together in masses, with the view to mutual support and protection. The result has been that, with the exception of a large proportion of the Gums, which were bought and planted in the Avenue in the spring of 1872, the trees on these grounds do not show any marked effects of the blast.

Blue Gums, raised from seed planted in the Park Nursery, and transplanted into the grounds in November and December, 1872, when six or eight months old, now stand robust and well formed trees, eighteen feet in height, with four inches diameter of trunk.

Monterey Pines of the same age and plantation, are fourteen feet in height, five inches thickness of trunk, and are ten or twelve feet in diameter across the span of branches.

Monterey Cypress have attained almost an equal height, with a somewhat greater breadth.

As may be seen, these trees stand where planted three years ago, but nearly all the growth alluded to has been made in the last two years; the trees, unless very well watered, generally making but little progress above ground during the first season while the roots are obtaining a deep hold upon the loose soil. The policy of placing trees very close together in the plantations is proven to be an excellent one; they seem to render each other assistance, and come forward much more rapidly when so near as to touch each other at two or three years of age. Staking, a very expensive operation, becomes unnecessary after the first year, in the heavier groups, and an effect is produced much sooner. These plantations are thinned, as they fill up, by chopping out the undesirable plants, and are thereby left in a more presentable shape than they otherwise could be grown. The growth of trees planted three years since is now such as to make this thinning operation necessary at some points during the present season, and several hundred large Cypress and Pines have been cut and transported to the sand district, where the brush is used in building the beach fence and in covering bare spots, through the reclamation plantation. It will be the policy hereafter to plant trees at the more exposed points even more closely than heretofore, not more than four or five feet apart.

At certain points along the most traveled portions of the Park drives, where the summer winds have a clean sweep at the roadway, despite all reasonable care in sprinkling, the dust will raise, and is blown upon plants adjacent and nearest to the road on the lea-ward side. It is an easy matter to wash this dust off by means of a strong stream from the road-hose, but it is found that many plants are injured by this wetting of the foliage and subsequent subjection to strong winds. To find suitable shrubbery for such locations, as well as for those subjected to the winds alone, has been a subject of considerable study and experiment, not without much interest, and resulting thus far in a fair measure of success. The necessity, heretofore alluded to, for covering a considerable area of the Park grounds, the soil of which portions is of the light, sandy nature, with a low, dense vegetation, which will remain green and bright at all times without irrigation, has made necessary another series of experiments, the results of which are looked forward to with interest. It is desired, of course, to have variety and pleasing contrast in such undergrowth, as well as special classes to place in positions where a distinct character of plantation is aimed at. This is a field for horticultural observation almost entirely unexplored under similar conditions, and the results cannot fail to be of general practical value. With such experiments the Horticultural Department of Park improvement is constantly engaged, and it is hoped that in the course of time results of value and interest to the public may be definitely reported.

TREES AND SHRUBS PLANTED IN GROUNDS

IN THE AVENUE AND EASTERN PORTION OF THE GOLDEN GATE.

Purchased and planted, spring of 1872	6,630	
Raised “ “ “ “ “	1,800	
“ “ “ season of 1872–73	16,745	
“ “ “ “ “ 1873–74	15,470	
“ “ “ “ “ 1874–75	7,934	
		48,579

UPON WESTERN, OR SAND, DISTRICT OF GOLDEN GATE PARK.

Raised and planted, season of 1873–74	300	
“ “ “ “ “ 1874–75	17,504	
		17,804

UPON BUENA VISTA PARK.

Raised and planted, season of 1873–74	650	
“ “ “ “ “ 1874–75	5,687	
		6,337

Total trees and shrubs planted out	72,720
To be planted, season of 1875–76	20,000
Total planted out with present appropriation	92,720

In addition to the above there are probably 13,000 to 15,000 young plants, for planting in subsequent seasons, in the nursery.

GRASS.

On account of the great amount of attention and water required for the keeping of turfs in good order in this climate, it has never been proposed to put any considerable area of the Park in grass. Experiments with a creeping, couch-like grass, known here as the Sandwich Island grass, indicate that the area of green may be, by its use, increased without greatly augmenting the expense of maintenance. This grass preserved a bright and fresh appearance throughout the dry season last year at the Park Nursery, with very much less water than it is necessary to put upon the ordinary lawn grasses to keep them green; and it is known to maintain a beautiful turf throughout the year in other portions of the State, where more thoroughly tried and established, without any irrigation during the dry season whatever. It will be placed in some portions of the grounds during the present season.

STABLE REPORT.

During the past two years, there have been from 12 to 16 work horses kept at the Park stables; from 2 to 4 horses for the use of the keeper and assistants in the discharge of their duty; at all times 1, and sometimes 2, for the use of the Superintendent. These horses have been employed in their respective capacities to great advantage; they have been worked regularly and with care; performing in the aggregate fully as much labor as is required by the same class of stock by any considerate private owner. Their original cost varied from $125 to $200 each. They were all young, 7 years or less, and nearly all perfectly sound when purchased, the work horses weighing from 1,050 to 1,250 pounds each. They have at all times received food which would be ranked as first class for any but fancy stock, and have been attended to more carefully and thoroughly than horses ordinarily are. Their condition and appearance has always been creditable to the institution, their health generally good. But one death has occurred—that of a work animal, subject to occasional attacks of *Euteritis*, finally dying of lung fever, in the month last passed. But one accident of serious nature has happened, which was occasioned by a runaway team, resulting in the disablement of a pair of work horses for 7 or 8 weeks. The general health and condition of the stock is now good.

The rolling stock consists of 1 heavy and 1 light road sprinkling wagon; 1 heavy, 2 medium, 2 light work wagons; 2 large manure wagons; 4 dump carts; 3 water carts; 1 large and 1 small road roller. Nearly all of these vehicles have been made to order, fitted with extra wide tires, and otherwise especially adapted to the use for which they were intended.

The following tables exhibit statistics of the keep of this stock for the past two years, work performed by it, and consequent cost of the same. That its ownership and control by the institution is fully proven to be an economical measure, is shown by the fact that the cost per horse to the Park for each *working* day, including *all* expenses of keeping the same, with harness and wagons, has been, for the work animals, $0.932, with teamsters paid at $55 per month—the rate allowed drivers on ordinary work--bringing the *working* day per team of two horses to about $4, while the wages paid hired teamsters, with their horses, harness and vehicles, range in the city from $5 to $7 per day ; the rate paid on Park work, when teams are hired, being $5.50 per day. In addition to this positive economy, much of the duty required of this stock could only be performed to advantage by animals entirely under the control of the Park management—sprinkling the drives at night, as they require it through the dry season, and other work at odd hours, for example ; and all of the service requires rolling stock specially adapted in one way or another to the purpose. *Food* has been purchased for the horses, as required, at market rates, delivered at the Park stable, it costing about a dollar more per ton to deliver it there than at the stables in the city. Every item that is received is examined, weighed, and only accepted when of proper quantity and quality. With greater storage room, it would be economical to lay in a sufficient quantity each season, when such supplies are cheap, to last through the winter. *Attendance* includes wages of hostler, watchman, and extra attendance of teamsters when on stable duty. *Repairs to Rolling Stock*, besides ordinary repairs, embrace some expensive alterations made in fitting up the road sprinklers. *Miscellaneous Items* include attendance of veterinary surgeon, medicines, sponges, brooms, salt, oil, soap, curry combs and brushes, stable repairs, and many other small items of expense unavoidable about a stable. *Live Stock*

Expended represents original cost of animal which died, charged against the stable as an institution, and apportioned out as part of expense of keeping the remainder of the stock.

TABLE I.

Total amount and cost of Food consumed at Stable of Golden Gate Park; also, attendance and other expenses for the two years ending November 30*th*, 1875.

Food Consumed.	No. Pounds.	Total Cost	Per Pound. Av. Cost.
Barley	63,063	$1,025 50	.0162
Oats	94,259	1,711 94	.018
Hay	197,447	1,725 53	.0087
Bran	50,488	524 51	.0103
Carrots	2,613	21 61	
Middlings	98	1 59	.0162
Cracked Corn	1,161	26 12	.0225
Shorts	1,053	12 11	.0115
Ground Barley	894	16 06	.018
Oil Cake Meal	204	3 57	.0175
Corn Meal	265	4 65	.0175
Total	411,545	$5,073 19	
Straw	188 Bales.	$195 59	
Attendance		$2,009 37	
Repairs to Rolling Stock		428 63	
Harness Repairs		125 68	
Miscellaneous Items		420 65	
Horse Shoeing		1,031 50	
Live Stock Expended		200 00	
Total		$9,484 61	

TABLE II.

Average cost per working day of Food, attendance, etc., of Horses, in Stable of Golden Gate Park, for one year, ending Nov. 30th, 1875.

	Feed.	Attendance.	Miscellaneous items.	Harness repairs.	Repairs to rolling stock.	Live stock expended.	Shoes.	Total.
Total number of days work performed by Park work-horses during the year ending Nov. 30th, 1875........4,422								
Total number of days work performed by keepers' and other horses during same time ...850								
Cost per working day of one Park work-horse	.50	.19	.039	.013	.048	.045	.097	.932
Cost per working day of keepers' and other horses..	.39	.19	.039	.003			.097	.719

TABLE III.

Average cost per day and month of Food, Attendance, etc., of Horses, in Stable of Golden Gate Park, for the year ending Nov. 30th, 1875.

	Park Work Horses.	Keepers' and Other Horses.
Total number of days fed...	9,852	2,198
Average cost per day of feed.....................	.458	.343
Average cost per day of attendance, etc............	.361	.290
Total....................	.819	.633
Average cost per month of feed....................	$13 74	$10 29
Average cost per month of attendance, etc	10 83	8 70
Total....................	$24 57	$18 99

BUENA VISTA PARK.

The fencing of this reservation had been completed prior to the commencement of the present biennial period, the date of my last general report, since which time the only further improvement made has been in the plantation of 6,327 young trees of various kinds. Situated as this Park is, upon the steep, sloping sides of a great rocky hill, it was an experiment doubtful as to result thus to attempt its foresting. During the winter of 1873–74 the first plantation, numbering 650 plants of varieties of the Eucalyptus, Acacia, Pine, Cypress and Sequoia families, was made. The success of a large majority of these was encouraging, and during the following season, that of 1874–75, a further plantation was made of like trees to the number of 5,687. If the Buena Vista Park were never improved otherwise than by being clothed with evergreen forest trees, in heavy masses and groupings, its commanding situation and picturesque features of topography would render it a delight to the eye of all passers-by on their way to and from Golden Gate Park, and thus a pleasing accessory to the greater pleasure ground. Further plantations will be made during the present season, probably to the number of 6,000 plants, and these only of the varieties which have succeeded best thus far.

The real picturesque beauty of much of the California scenery is lost to the casual observer by reason of the absence of trees. Their strong lights and shades, and the irregularity of outline which they impart to the hill views, bring out strongly the features of the scene, and render the otherwise uninteresting landscape acceptable. Thus the real picturesque beauty which is presented in the scenery south from Golden Gate Park and Avenue is not appreciated. The foresting of Buena Vista Park, at the eastern extremity of these hills, will, as spoken of, add much to the view referred to ; but what a noble landscape would there be, could this plantation be carried in broken masses southerly and westerly near the summit and upon the spurs of the range, running thence to and terminating in the Mission Mountains, and over these latter themselves !

Buena Vista Park, then, is destined to be a very important feature of the general Park improvement, if for no other reason than that it will be in such decided contrast with the surrounding country.

MOUNTAIN LAKE PARK.

This tract, situated south of the Presido Military Reservation, and bordering the Laguna, from which it derives its name, was taken possession of and fenced according to your instructions, in the month of June last past. It contains 13.14 acres ; is of very irregular shape in outline ; but favorably situated and disposed, as regards topographical configuration, to a very acceptable style of improvement. The fact of its distorted outline, pinching down, as it does near the middle, to a width not much more than sufficient for a driveway, is a serious detriment to its capabilities. Could its area be increased by the addition of 25 acres of the Military Reservation, including the Lake, it might be made the most beautiful of the parks about San Francisco. Such an improvement, entirely surrounding the Lake, would be a positive benefit to its waters, protecting them from pollution, while the Lake itself would be the most charming feature of the grounds. Such a small portion of the Government Reservation could easily be spared for this purpose to the advantage of the remaining area ; it certainly would not interfere with the use of the higher grounds for purposes of fortification.

GREAT HIGHWAY.

The reservation of this name comprises a strip of land along the ocean beach, extending south from the Cliff House bluff about 2$\frac{7}{8}$ miles, varying in width from 200 to 400 feet according to the curvature of the shore line, which is to be the scene of conflict with the in-coming sands. The management of this beach is the key to all work of permanent reclamation of the downs. Upon it the sands are thrown by the waves of ocean and carried thence inland—a continuous fresh supply to the drift. The method proposed for arresting this advance, explained in former reports, is now being applied, for about a mile in length of the beach.

Along a line upon the Highway reservation, lying parallel to and 100 feet west of its eastern boundary, from its intersection with a prolongation of the northern boundary of Golden

Gate Park, southerly, for a mile in length, across the face of the western end of the Park Reservation, and for half a mile south of it, a brush fence has been built. Redwood posts, 4 x 4 inches and 14 feet long, were set 3 feet into the sand, at intervals of 12 feet; to which, on the leeward side, two rails of 1 x 6 pine fencing lumber were loosely fastened, originally near the ground and about two feet apart. Against these rails on the outside a thin wall of brush was laid which, making an eddy in the winds, causes the advancing sands to heap up about the fence, a steep bank on the leeward face, sloping away gently towards the beach. As the surface becomes higher, the rails are raised and more brush applied; the dune being now about 9 feet in height, and the drift of the sand effectually restrained from advancing more than 18 feet within the line of fence. As the present fence posts become covered, another row will be set parallel to them and about 50 feet further towards the water, where the same process of checking the sands will be gone through with, until the hillock becomes high and wide enough to improve as the proposed elevated drive, along which will be planted suitable trees; the outer slope of the embankment being planted with sea-beach grass and its inner face covered with shrubbery. In the course of time, the grass arresting further drift, and growing through it, the slope of the beach will become too great for lodgement of more sand, and the advance will be checked. The drive on the summit of the dune will supply the place of that on the beach, commanding a fine view of the ocean and the inland improvements; and the proposed lower road at the foot of the dune on its inner line, will furnish a grand promanade, nearly three miles long, level and straight, entirely protected from the winds. It will be necessary to construct proper drains and sewers through this shore dune, for the outlet of the adjacent park and city works of this character, and it would be well to provide them before the work has gone much further.

The fence should be immediately continued for the full length of the Highway reservation, so that the work, which nature is performing at her own rate of progression, may be uniform; otherwise the cost of future improvements will be greatly augmented. The inner road should then be built, and used in the prosecution of further improvements upon and manage- of the dune. It will not do to commence this work without carrying it steadily forward to completion. The cessation of needful attention for one year would result in great damage to all which had previously been accomplished.

It will be expedient also to raise a large quantity of the beach grass from seed, and have it in readiness to plant at the proper time, which will be in the second year after the first fence has been built. This planting cannot be delayed after the third year, for the waves will then begin to wash the foot of the dune, which must be thoroughly overgrown and interlaced with the grass roots, in order to resist their action. During the present season a portion of the dune already formed will be planted with grass of the kind mentioned, which has been raised during the past two years upon the Park; and next year it will be necessary to complete this operation, so far as the present fence extends. The remainder of the beach-grass seed on hand will also be sown during the coming month. The consummation of this scheme, which depends in so great a measure upon nature alone, guided only by human agency, cannot be greatly hastened, but must be worked upon steadily. That it will finally succeed in accomplishing the object designed, there can be no doubt, as the work so far prosecuted indicates, and experience elsewhere has proven.

GOLDEN GATE PARK (CONTINUED).

RECLAMATION.

It is now demonstrated beyond doubt, that the shifting sands may be completely reclaimed, covered with vegetation, and ultimately clothed with a thrifty forest, without any such expensive operation as applying a coating of soil or manure to effect the first, or watering the young plants to effect the final result. Indeed, nothwithstanding the unfavorable seasons of 1873–4 and 1874–5, during which the work has been prosecuted, there is now but a limited area of drift sand left

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of the 700 acres of this characted originally within the Park limits, and this remainder is in great measure the result of the sands from without the Reservation, on its northern and southern sides, being blown into and upon it by the northers and southwesters of winter, Still more gratifying is the fact, that young trees of many desirable varieties thrive without irrigation, when set out upon these reclaimed lands in the simplest and most inexpensive manner. There can be no doubt that, with proper management and continued unremitting attention, this portion of Golden Gate Park will be, within a few years, a handsome piece of forest land. To effect this end, however, young trees must be planted out by the hundred thousand for a year or two. The present rate of progression will not accomplish it in forty years. Leaving the valleys, and planting only the hills with forest trees, there are about 400 acres to be covered. If we place the plants 5 feet from each other — and they should not be at a greater distance, if we expect them to render mutual support, and shade the ground at an early day that their growth may be rapid — it will take 1,764 to the acre, or 705,600 in all, which should be set out in two or three year's planting. To raise and handle this stock would necessitate an enlargement of the nursery facilities at the Park, and greater resources otherwise than have yet been at hand for the purpose ; but, once planted, the work is done for all time, and the result is improving annually. In the course of a few years these plantations should be thinned out, and at 8 or 10 years the necessary thinning would produce a valuable supply of wood.

It has been thought that the French pine (*P. maritima*) could be propagated upon these dunes from seed ; and so it can, there being now a large number of seedlings scattered over the area sown ; but their progress is so very slow that the better plan undoubtedly is to raise the plants in seed boxes, prick them out into boxes containing 30 or 40 each, and transplant them into the sands, at 6 to 10 months of age. Moreover, it is proven that other trees of much more rapid growth will succeed with equal certainty, if treated in this latter manner, the Eucalyptus, Acacia latifolia, Acacia lophantha, Tamarisk and Monterey Pine, for instance.

The Lupin Plantation, on the drift sands, has been made at great disadvantage during the past two years. Very unequally distributed rains, and these always preceded, accompanied and succeeded by high winds and long intervening spells of drying north winds — circumstances most unfavorable to plantations upon drift sands—have been the ruling feature of both seasons, particularly that of 1874–5. Nevertheless, the work has been attended with an encouraging measure of success, and the result, as before stated, is now almost complete mastery of the situation. The remaining area of drift will be replanted during the present season, there being sufficient lupin seed left from the work of last year for the purpose. It now becomes important to check the sands on each side of the Reservation, for, as above mentioned, the winter winds bring the drift hence upon the Park improvement. As the first fruit of the example set by the Park authorities, and the success attending their efforts, the owners of about 350 acres of the dune land lying south of the Reservation and next to it, have contracted to have their property reclaimed in a similar manner. Unfortunately their tract is much more broken, and situated upon more exposed points than the Park, which renders the work more difficult and expensive. Upon its accomplishment, however, the Park will be protected on that side, an advantage the value of which can only be estimated upon thorough acquaintance with the circumstances.

MAINTENANCE OF THE PARK.

Within the past two years, as some considerable portions of the Park have been finished, it has become possible to define clearly and separately the works of maintenance and improvement, and keep a correct account of the cost of each.

It has cost, during the past two years, the sum of $45,380 to maintain and guard the Golden Gate Park and Avenue; and it will require during the next two years, the expenditure of $27,000 per annum, or in all, $54,000, for the same purpose alone, without any improvement whatever — except the natural development of the plants — not allowing anything for payment for the necessary water for irrigation and other purposes, in the finished portion of the grounds. It may appear that the cost of maintenance, having constantly increased since the work of improvement began, will continue to augment as construction progresses. Not so, however. There has not been anything to maintain until the past three years, and very much of that is still in such an unfinished condition that it is more expensive to keep, than if it were completed. When there shall have been one million dollars expended upon Golden Gate Park, according to present plans, it will be a pleasure ground commensurate with the demands of San Francisco, and keep pace with her growth, by natural development, for fifteen or twenty years to come. Thereafter, and in the mean time, an expenditure of thirty-six thousand dollars per annum, will guard it and maintain it in good condition, water being provided.

The items of maintenance ~~and~~ are, guard duty, road and walk dressing, cleaning drives, repairing drives, sprinkling drives, repairing gates and fences, repairing buildings, storekeeper's duty, janitor's duty, repairs to stock and implements, repairs and attention to water distributing and drainage systems; and miscellaneous small items, including material and labor expended on each, come under the head of General Maintenance. Plantation attendance, plantation watering, grass maintenance, and general garden work, come under the head of Horticultural Maintenance. In addition to these, the necessary superintendence and clerical work, to direct and keep account of the force, is of course, to be provided.

GOVERNMENT OF THE PARK.

This is a very delicate and thankless task. The rules adopted are certainly not very stringent, and their execution has been guarded and cautious. The rate of speed allowed upon the Park drives is not reduced to nearly so moderate a pace as in older institutions of the kind, yet there have been frequent transgressions of the rules in this respect, and arrests made necessary. It is difficult to effectually stop such inconsiderate conduct, on the part of the fast element in our Park visitors, with the present number of mounted keepers; but much has been and is now being done to check the evil by the arrests made, as shown upon an exhibit transmitted herewith, and the frequent kindly warnings which are given when opportunity offers. There should be six well mounted keepers on the present constructed drives, in place of the three mounted and one foot keeper now on duty.

Other offenses are quite rare in the Park, a circumstance which speaks well for the regard in which public property is held by the community at large. An occasional huntsman is found trespassing upon Buena Vista Park, although signs prohibiting shooting are placed at intervals all over that reservation and upon the boundary fence. It is generally the case, however, that the transgressor is a foreigner, who cannot read English, and excuses himself upon that ground, not knowing that the tract is reserved for park purposes.

USE OF THE PARK.

Golden Gate Park now appears to be the objective point of nearly all out-of-door pleasure-seekers, who search for health and recreation by riding or driving to the immediate suburbs of our city. Its roads are daily thronged with equipages of every variety and grade suitable for pleasure travel, and the number of pedestrian visitors is only so limited on account of the shamefully inadequate means of public transportation thence from the city.

Each gate-keeper who attends a certain limited area of the grounds adjacent to his gate, is also charged with the duty of counting and classifying the pleasure travel which enters by it, an account of which he renders daily upon a small blank form to the Park-keeper, who keeps a general record of visitors. From this record the tables transmitted herewith are compiled, and from those, we gather as a summary, the following:

TABLE SHOWING VISITS PAID TO GOLDEN GATE PARK FROM JAN., 1873, TO NOV., 1875, INCLUSIVE.

Year.	Vehicles.	Equestrians.	Total People.	Remarks.
1873	74,980	14,983	254,956	For 11 months.
1874	130,888	24,190	444,618	" 12 "
1875	157,091	31,288	516,170	" " "

It will be observed that there is a steady increase from year to year, and in view of these figures it must be admitted that the improvement of the Park is supplying a great public necessity ; if any further proof of this were required, an inspection of the character of the use to which these grounds are put must convince the most skeptical. It is to be regretted, however, that want of cheap communication prevents so large a number of people from visiting the Park, and forstalls a principal object in its improvement. During the approaching Spring there will be accommodation for pedestrians in the way of walks, rambles, seats, bowers, and shelters surrounded by shrubs and flowers ; it is to be hoped that there will be means provided for their coming in greater numbers.

FUTURE WORKS.

The works most pressing for future prosecution are a continuation of the class of improvements referred to above, as specially intended for the reception of pedestrian visitors, with the needful engineering works in the way of drainage, water distribution, etc.; the construction of some of the archways, through which the walks are to be led under the drives where it is necessity to cross these, in order that foot passengers may not be in danger of being run over by passing vehicles ; the building of the Manor House, the principal house of refreshment and rest intended for the Park, which is very much needed, inquiries being made almost daily why such a house is not provided; the continuation of the horticultural work to accompany the other improvements referred to; the completion of the foresting of the Sand District, as explained under the head of Reclamation; and the prosecution of the beach protection works, as spoken of in the portion of this report referring to the Great Highway.

Respectfully submitted,
WM. HAMMOND HALL,
Eng'r and Sup't.

PLAN OF GOLDEN GATE PARK AND AVENUE.

In the report of the Engineer, appended to the first biennial report of the Park Commissioners, a full description of the theory of the plan of the Avenue leading to Golden Gate Park is given. In Appendix "C" to the second biennial report of the Board, a detailed description of the plan of the Park itself is given.

From these papers the following brief description is compiled, with the addition of some statistical matter:

DESCRIPTION.

The Avenue reservation is 3,834.4 feet in length, and 275 feet wide, extending from the west side of Baker to the west side of Stanyan street. It contains 1,054,459.5 sq. ft., or 24 acres, 9,019.5 sq. ft. Of this area, according to the plan, 146,861 sq. ft. are devoted to walks, 362,828 sq. ft. to roads, and 544,770.5 sq. ft. to plats or beds.

The Park reservation extends from Stanyan street, on the east, to the Great Highway reservation (or ocean beach), on the west, a distance of somewhat more than three miles, between D and Fulton streets, on the north, and H street, on the south, and is about 2,640 feet, or half a mile, wide between H and D streets. Its area is about 1,019 acres, which, according to the plans, is intended to be improved as follows:

	Length.	Area.
Drives for pleasure travel, - - - - -	51.327 ft.	50.53 acres.
Three cross traffic roads for business travel, -	6.440 "	5.80 "
Saddle roads, for horseback riding only, -	16.740 "	7.65 "
Walks and paths, for foot travel only, - -	115,600 "	25.00 "
Fresh water lakes. four in number, - -	......	12.30 "
Salt water lake, near beach, - - -	......	15.00 "
Highly finished park, - - - - -	......	120.00 "
Picnic grounds, rambles, etc., - - -	......	90.00 "
Nursery, yards, shops, offices, etc., - -	.....	20.00 "
Forest land. - - - - - - -	......	672.72 "
Total, - - - - - - -		1019.00 acres.

A long time will elapse before it becomes necessary to build the traffic roads, particularly the two nearest the west end of the reservation. They are intended to carry the business travel across the Park, out of sight of the main drives and walks, being so located as to pass under these latter through suitable archways.

The plan provides for, ultimately, four houses of refreshment and rest — though the first two mentioned, with a modification of the third, will be amply sufficient for many years to come.

A : the Manor House, the principal structure and house of refreshment ; located upon a terrace in the center of the finished grounds, as contemplated; overlooking the Lawn and Water Terrace to the east, the Park in front, the Green to the west, and a lake in the rear, towards the north. This will be a one-story structure, with wide glass-enclosed portico all around it ; kept as a first-class house, under the strictest rules.

C : the Dairy, or children's refreshment house, situated in the Children's Quarter, a portion of grounds bordering Stanyan street, south of the main entrance, extending to Kate street entrance ; to be fitted expressly for children's use. At the Dairy will be supplied such wholesome and simple food as children should partake of. It will be in the midst of croquet grounds, play houses, (K), and resting bowers and seats.

D : the Café ; a small restaurant to be in the picnic grounds, is called the Café. The picnic grounds contain about 20 acres of rolling land, covered with trees and bushes, threaded by walks and paths, and dotted here and there with rustic pavilions (L) (N) (N) (L), seats, bowers, etc.

T : a tower or lookout on Pine Hill, to be constructed as an enclosure about and over the present tank.

B : proposed park office ; near the shops, nursery, storehouses, stable, etc.

G : foreman's and men's quarters, in the same neighborhood.

F: superintendent's house.

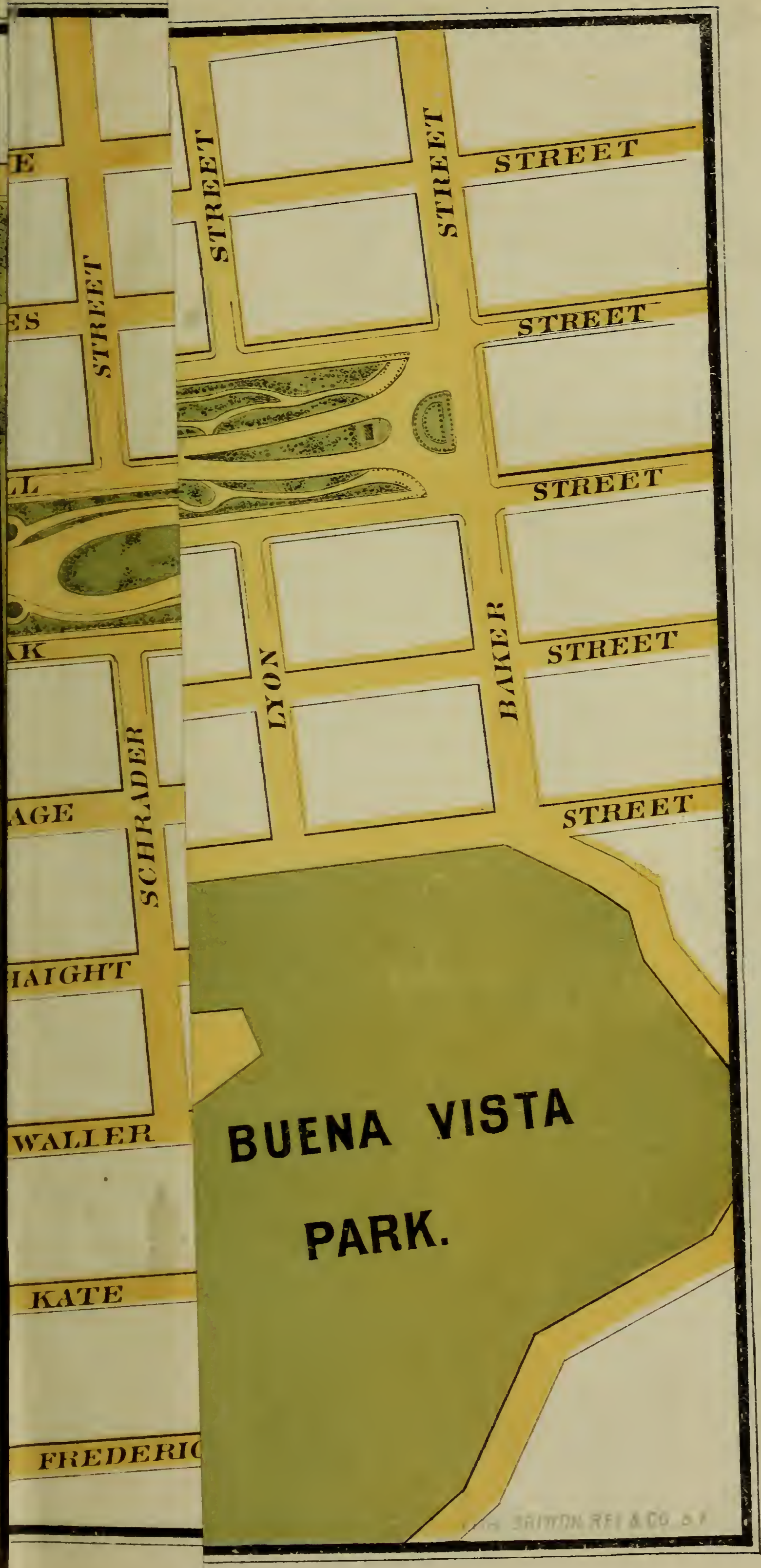
J: site for fountain.

a, a: location of archways through which walks will be carried under the drives, and thus avoid danger to foot-passengers in crossing the carriage-ways.

E: shows the position of the fourth house of refreshment, on the Northern Drive near the beach. As private enterprise will probably establish a house of the class this is intended to be, near the same locality, and without the Park Grounds, it may be as well to dispense with this structure altogether.

The refreshment houses are intended to be rented to responsible parties under strict rules, and will no doubt produce an income sufficient to pay interest on their original cost, expense of their maintenance and that of the grounds immediately around them.

PACIFIC OCEAN
HIGH WATER LINE
LOW WATER LINE
OCEAN VIEW DRIVE
GRAND DRIVE
TIDAL LAKE
WALK
LAKE
LAKE
AV.
ST
47"
46"
45"
44"
42"
41"
40"
39"
38"
37"
36"
35"
34"
33"
31"
30"
29"

E
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STREET
LYON
BAKER
BUENA VISTA
PARK.
LITH. BRITTON REY & CO. S.F.

AV
D
ST
FULTON
ST
NORTH RIDGE ROAD
LAKE
LAKE
LAKE
1st
2nd
3rd
4th
5th
6th
7th
8th
9th
10th
11th
12th
13th
15th
16th
17th
18th
GROVE
HAYES
FELL
OAK
PAGE
HAIGHT
WALLER
FREDERICK
STREET
STANYAN
SCHRADER
CLAYTON
COLE
ASHBURY
MASONIC
BUENA VISTA
PARK.

FOURTH

BIENNIAL REPORT

OF THE

SAN FRANCISCO

PARK COMMISSIONERS.

Nov. 77

1876-7.

SAN FRANCISCO:
Spaulding & Barto, Printers, "Scientific Press" Job Printing Office,
414 Clay Street.
1877.

FOURTH

BIENNIAL REPORT

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1876-7.

San Francisco:
SPAULDING & BARTO, STEAM BOOK AND JOB PRINTERS,
414 Clay Street, between Sansome and Battery, S. F.
1877.

BOARD OF PARK COMMISSIONERS.

E. L. SULLIVAN.
WM. ALVORD.
LOUIS McLANE.

OFFICERS.

E. L. SULLIVAN	*President.*
WM. B. PRICHARD	*General Superintendent.*

REPORT

OF THE

PARK COMMISSIONERS.

To the Legislature of the State of California:

The Board of Park Commissioners have seen no reason to alter the general plan of operations announced in their second and third biennial reports to the Legislature. They have become more and more convinced of the necessity of pushing to completion the construction of "The Great Highway" committed to their charge by Act of March 11th, 1874.

This improvement will not only furnish a sea-shore drive of unsurpassable beauty, but serve as a permanent bulwark against the encroachments of the sand-drift, whose steady growth menaces interests of more consequence than the Golden Gate Park, if the experiences of the Western Coast of Europe are applicable here. But the construction of the Highway requires a great deal of labor. Its foundations must be laid by continuous effort, not piece-meal.

The scanty means at the disposal of the Commissioners compelled them to abandon the work, of which a section had been commenced. Indeed, unless the Legislature shall by prompt action authorize the Supervisors of the City and County to appropriate at least twenty thousand dollars from the General Fund to supply the demand upon the Park Improvement Fund, the Commissioners will be obliged to discharge, on the first of January next, the greater part of the laborers whom they now employ on the roads and care of the plantations.

Exhibit "B," appended to the Superintendent's Report, herewith forwarded, gives the receipts and disbursements for the past two years. It shows a balance on hand, November 30th, 1877, of $1,346.73.

It is worthy of remark that infractions of Park Police regulations have augmented the Park resources more than $2,000. But for this aid, the impending discharge of laborers must have already taken place.

The second section of the Act of April 3d, 1876, is so framed that the Commissioners doubted their power even to hire an office in the City. Through the courtesy of the Engineer of the West Side Irrigation Commission, they were allowed the privilege of desk room, and held their meetings and deposited their books and papers in his office.

By reference to all the past reports of the Commissioners it will be found that no charge whatever has been allowed for legal services. Emergencies may however arise requiring the advice and service of counsel, and in such case the Commissioners ask for discretionary power.

Under said Section 2, the Commissioners did not consider themselves authorized to employ a Secretary. They submit that such ill-judged economy only operates in such a way as to take up the time of other officers when they could be more profitably employed.

Exhibits "D" and "E" show the number of visitors to the Park. Attention is called to the fact that the numbers have been steadily increasing.

Permission has been given to the United States to construct a Life Saving Station at the northwest corner of Golden Gate Park. A house is now being built which promises to be ornamental as well as useful.

Exhibit "L" shows a creditable list of donations made to the Park.

It is also proposed by a number of liberal citizens to make a donation of a highly ornamental iron and glass structure, imported at great cost by the late James Lick. The Board should be authorized to erect this edifice. The estimated cost of erection is $15,000. When finished it would doubtless return a good rental.

In conclusion we recommend an increase of the Park tax to three (3) cents upon each one hundred dollars' valuation of taxable property in the City and County, for Maintenance Fund, and also the authority to rent an office and employ a Secretary and Engineer at the discretion of the Commission, as provided in Section 4, Act 802, entitled "An Act to provide for the improvement of public parks in the City of San Francisco," approved April 4th, 1870.

Control of the grades on D and H streets should be given to the Commission, in order that uniformity of grade may be established from Stanyan street to the Ocean.

Respectfully submitted,

E. L. SULLIVAN,
WILLIAM ALVORD,
LOUIS McLANE.

San Francisco, December 1st, 1877.

REPORT OF THE SUPERINTENDENT.

Golden Gate Park,
November 30, 1877.

To the Honorable the Board of Park Commissioners:

Gentlemen—I herewith submit a statement of the works prosecuted on the grounds under your supervision, during the two years ending November 30th, 1877.

PARK MAINTENANCE.

The labor employed has been engaged principally in the maintenance of the completed drives, walks and plantations of Golden Gate Park.

MAINTENANCE OF DRIVES AND WALKS.

This work comprises the dressing, sprinkling, cleaning and smaller repairs necessary to keep them in good condition. There are now constructed and in use 35,882 linear feet of roadway, varying in width from 36 to 90 feet, and 1,600,830 square feet in area. This has received a coating of rock over its entire extent twice since November, 1875, and as many as four times on considerable portions, where the wear and tear has been greatest. Sprinkling with hose and wagons employs a force of men and teams, exclusively, at least five months, and partially during the remainder of the year.

The finished walks have been kept in repair. Those unfinished cannot well be completed until the grounds adjacent have received the final work of shaping and plantation.

MAINTENANCE OF PLANTATIONS.

This work embraces watering and attendance, such as trimming, mulching, staking and hoeing around trees and shrubs;

and care of the grass. In the avenue and eastern district of Golden Gate Park there have been planted up to date, trees and shrubs, 65,766; in the western or sand district, 37,882.

Attention has been bestowed principally on the plantations in the avenue and eastern district of Golden Gate Park. Their progress has been fair, notwithstanding the drought of the past season, and insufficient facilities for water distribution, which, under present circumstances, could not be avoided. Heavy pruning has been resorted to with several varieties of trees, to enable them to withstand the prevailing summer winds and the storms of winter, which, while it causes them to present rather an unfavorable appearance at present, will in the future, I believe, be more than recompensed by their strength, compactness and symmetry of form.

PARK IMPROVEMENTS.

The work of improvement has been limited to the completion of a part of the walks; the construction of a bridle path, 5,000 feet long and 20 feet broad; the preparation of grounds, formation of compost heaps, and the propagation and planting of trees, shrubs and flowering plants. There were raised in the Park nursery:

Season of 1875 6	Trees and shrubs		22,499	
" 1876–7	" "		13,137	
" 1877–8	" "	viz., Tamarisks	7,000	
" "	" "	" Monterey pines	7,600	24300
" "	" "	" Blue gum	9,700	
" "	" "	" Flowering plants	1,500	

There are, in addition, in boxes, 18,000 Monterey pines and 4,000 seedlings of other sorts for the season of 1878–9; also, there will be about 10,000 flowering plants ready by next spring. For the cost of all the different works of maintenance and improvement, as well as stock and material purchased for those purposes, during the two years ending with this date, I refer you to Exhibit "C," accompanying this report.

Respectfully submitted.

W. B. PRICHARD,
General Superintendent.

EXHIBIT "A."

PARK COMMISSIONERS' RECEIPTS AND DISBURSEMENTS FROM ORGANIZATION OF THE BOARD MAY 3, 1870, TO NOVEMBER 30, 1875.

RECEIPTS.	
Product of sale of 125 Bonds of $1,000 each, at .92 5-100	$115,062 50
Product of sale of 125 Bonds of $1,000 each, sold, 25 at 92; 25 at .91 75-100; 75 at .91 55-100	114,600 00
Product of sale of 75 Bonds of $1,000 each, at par	75,000 00
Product of sale of 75 Bonds of $1,000 each, at .93	69,750 00
Product of sale of 75 Bonds of $1,000 each, sold, 35 at .90 70-100; 40 at .91 5-100	68,165 00
Street Account	2,902 86
Park Improvements, sale of Lupin seeds and use of tools	812 76
Police Account	660 00
Interest Account	396 00
Pound Account	356 50
	$447,705 62
Balance, cash on hand, November 30, 1875	$34,527 95

DISBURSEMENTS.	
Park Improvements	$366,231 35
Surveying and Engineering	16,165 00
Salary Account	13,395 00
Street Account	8,973 17
Advertising	2,690 18
Office Rent	1,910 00
Printing and Lithographing	1,641 20
Interest Account	914 97
Stationery	549 75
General Expenses	357 50
Office Expenses	349 55
Balance, cash on hand, November 30, 1875	34,527 95
	$447,705 62

EXHIBIT "B."

PARK COMMISSIONERS' RECEIPTS AND DISBURSEMENTS FROM NOVEMBER 30, 1875, TO NOVEMBER 30. 1877.

RECEIPTS.	
Balance, cash on hand, November 30, 1875	$34,527 95
Sale of Rustic Lumber	48 80
From "General Fund"	15,000 00
From Taxes	40,636 83
From sale of Disabled Horses	161 50
Police Account	1,520 00
Pound Account	518 00
	$92,413 08
Balance, cash on hand, November 30, 1877	$1,346 73

DISBURSEMENTS.	
Improvements and Maintenance	$83,496 93
Salary Account	6,586 66
Office Rent	315 00
Printing and Lithographing	459 00
Stationery	80 51
Office Expenses	93 75
General Expenses	34 50
Balance, cash on hand, November 30, 1877	1,346 73
	$92,413 08

San Francisco, Cal., November 30, 1877.

92,413.08 avail
34,527.95 bal
57,885.13 Rec.

92 413.08 Avai
1 346.73 Bal
91,066.35 Exp

EXHIBIT "C."

DETAILED STATEMENT OF DISBURSEMENTS FROM NOVEMBER 30th, 1875, TO NOVEMBER 30th, 1877.

Repairs and maintenance of Drives, labor	$15,793 82
Construction of Bridle Path, labor	2,269 73
Macadamizing Walks, labor	1,062 00
Construction of Nursery Road, labor	252 00
Construction entrance Picnic Ground, labor	66 50
Repairs and care of Buildings, Gates and Fences, labor	1,344 26
Rustic Work, labor	340 00
Digging and Curbing Trial Well, labor	21 30
Grading and preparation of Grounds, labor	3,335 00
Hauling Soil, labor	180 00
Sand Reclamation, labor	1,255 74
Planting Trees, labor	1,863 97
Maintenance of Tree Plantation, labor	14,216 79
Planting Grass, labor	336 00
Maintenance of Grass, labor	1,816 15
Nursery attendance, labor	3,872 57
General Work, labor	1,052 21
Compost (preparing) labor	1,242 95
Surveying, labor	103 28
Repairs to Rolling Stock, labor	122 29
" " " labor and material	598 75
" Stable Stock, labor	1 05
" " " labor and material	5 00
" Tools and Implements, labor	32 00
" " " labor and material	7 00
" Harness, labor and material	49 12
Blacksmithing and Sharpening, labor and material	238 15
Shoeing Horses, " "	1,098 00
Plumbing and Tinning " "	207 88
Mill Work, " "	43 20
Boring Well, " "	1,067 00
Water Pipe extension, labor	130 82
Repairs and maintenance of Water Distribution, labor	524 85
Teamster, labor	94 93
Cartage	22 00
Stable attendance, labor	2,317 39
Head Gardener, labor	745 50
Park Keeper, labor	745 50
Miscellaneous Carpenter work, labor	372 00
Guards (Guards, Police, Laborers, etc), labor	12,698 17
Miscellaneous labor	2,455 03
Live Stock	245 00
Rolling Stock	167 00
Stable Stock	146 19
Miscellaneous Items, Stock and Material	127 19
Watering Apparatus	599 00
General Tools and Implements	200 66
Reaping, Cultivating and Garden Implements	14 60
Surveying and Draughting Implements	3 50

Account Books	$7 50	
Soil	47 60	
Supplies (Hay and Grain, Axle Grease, Soap, Oil, etc)	4,941 14	
Lumber	407 06	
Hardware	207 98	
Paints, Oil and Glass	85 45	
Water Pipe and Fittings	569 18	
Powder and Fuse	428 50	
Trees and Shrubs	698 60	
Seeds	589 88	
Lime and Cement	8 00	
Veterinary	3 00	
Total Improvements and maintenance (see Exhibit "B")	$83,496 93	
Salary account, (see Exhibit "B")	6,586 66	
Office rent, " "	315 00	
Printing & Lithographing " "	459 00	
Stationery " "	80 51	
Office Expenses " "	93 75	
General Expenses " "	34 50	
Total amount of Disbursements	$91,066 35	
Balance Cash on hand, (see Exhibit "B")	1,346 73	
		$92,413 08
Balance Cash on hand November 30, 1875	$34,527 95	
Receipts from all sources, (see Exhibit "B")	57,885 13	
		$92,413 08

EXHIBIT "D."

SUMMARIZED STATEMENT OF THE NUMBER OF VISITORS TO GOLDEN GATE PARK FOR THE YEAR ENDING NOVEMBER 30, 1876.

MONTH.	Carriages	Double Buggies	Single Buggies	Equestrians	Pedestrians	Total Vehicles	Total People
1875 –December	1,655	2,404	8,991	2,490	1,490	13,050	43,130
1876—January	1,499	1,980	7,777	2,094	1,228	11,256	37,090
February	2,246	2,456	14,926	3,164	5,664	19,628	68,902
March	2,124	2,344	10,934	2,625	1,015	15,402	49,846
April	2,314	2,245	12,045	2,799	1,199	16,604	53,810
May	2,011	2,015	10,430	2,535	1,776	14,456	47,679
June	1,797	1,983	10,256	2,270	1,193	14,036	45,571
July	2,027	1,863	10,885	2,284	1,065	14,775	47,674
August	1,990	2,128	11,326	2,733	781	15,444	49,846
September	2,112	2,090	11,625	2,461	937	15,827	50,879
October	2,602	2,247	12,556	2,629	1,134	17,405	55,978
November	3,376	2,951	15,024	3,232	1,454	21,351	68,732
Total	25,753	26,706	136,775	31,316	18,936	189,234	619,144

EXHIBIT "E"

SUMMARIZED STATEMENT OF THE NUMBER OF VISITORS TO GOLDEN GATE PARK FOR THE YEAR ENDING NOVEMBER 30, 1877.

MONTH.	Carriages......	Double Buggies..	Single Buggies..	Equestrians.....	Pedestrians....	Total Vehicles..	Total People....
1876—December....	3,237	3,072	15,237	3,080	3,122	21,546	70,840
1877—January..........	2,189	2,271	10,892	2,023	851	15,352	48,930
February.........	3,246	2,597	14,476	2,538	2,887	20,319	66,382
March............	2,715	2,723	13,355	2,380	1,202	18,793	59,961
April............	2,364	2,366	12,282	2,607	1,128	17,012	54,771
May..............	2,152	2,247	11,333	2,774	886	15,732	50,856
June.............	2,472	2,260	12,487	2,593	1,288	17,219	55,538
July.	2,715	2,398	13,341	2,830	1,066	18,454	59,258
August...........	2,386	2,444	12,856	2,600	1,069	17,68	56,727
September........	2,986	2,550	13,995	2,838	1,250	19,531	62,681
October.........	2,789	2,237	13,377	2,574	1,221	18,403	59,004
November........	2,813	2,406	13,000	2,764	1,289	18,219	58,710
Total	32,064	29,571	156,631	31,601	17 259	218,266	703,658

EXHIBIT "F."

SUMMARIZED STATEMENT OF THE AMOUNT OF WATER USED AT THE PARK FOR THE TWO YEARS ENDING NOVEMBER 30, 1877.

MONTH.	Gallons Used.	Average per Day.
1875—December....................	279,525	9,017
1876—January......................	142,350	4,592
February......................	506,700	17,472
March	802,950	25,974
April	1,217,400	40,580
May....	1,921,725	61,991
June..........................	1,977,000	65,900
July..........................	2,104,800	67,897
August........................	2,150,325	69,365
September	1,824,532	60,818
October.......................	1,098,543	35,437
November......................	733,500	24,450
Totals...........................	14,759,350	
1876—December....................	747,600	24,116
1877—January........	615,900	19,867
February	447,150	15,969
March......	889,610	29,020
April	1,108,980	36,966
May	2,120,310	68,397
June..........................	2,339,625	77,987
July..........................	2,603,700	83,990
August......................	2,387,325	77,010
September....................	2,462,850	82,095
October.......	1,835,250	59,201
November	264,300	8,810
Total..................	17,822,600	

EXHIBIT "G."

CLASSIFICATION OF WEATHER AT THE PARK FOR THE TWO YEARS ENDING NOVEMBER 30, 1877.

MONTH.	DEC. 1, 1875, TO DEC. 1, 1876.				DEC. 1, 1876, to DEC. 1, 1877.			
	Days Fine and Pleasant	Days Cloudy, Light Winds prevailing....	Days Showery, Foggy, Cold, or very Windy	Days Rainy	Days Fine and Pleasant....	Days Cloudy, Light Winds prevailing ...	Days Showery, Foggy, Cold, or very Windy	Days Rainy ....
December	11	6	11	3	26	1	4	......
January	13	4	11	3	14	6	8	3
February	15	8	3	3	15	6	6	1
March	14	5	7	5	19	6	3	3
April	20	3	7	....	16	4	10	.... ..
May	14	4	13	....	14	6	10	1
June	21	2	7	....	19	7	4	....
July	15	1	15	....	12	3	16	....
August	13	1	17	....	12	....	19	....
September..........	18	3	9	....	19	1	10	....
October	15	5	10	1	18	6	7	....
November	20	9	1	....	19	6	5	....
Total	189	51	111	15	203	52	102	8

EXHIBIT "H."

ARRESTS MADE FOR VIOLATION OF PARK ORDINANCES FROM DECEMBER 1, 1875, TO DECEMBER 1, 1877.

MONTH.	NUMBER.	NUMBER.
December....................	1875— 2	1876— 6
January..............	1876—	1877— 5
February	6	14
March..	3	12
April....................	3	11
May	....	2
June...	....	....
July..................	....	5
August...	....	....
September...........	3	5
October..........	7	1
November	....	10
Total	24	71

CAUSES OF ARRESTS.	NUMBER.
Obstructing Park Drives..........	1
Fast Driving or Riding...	76
Discharging or Carrying Firearms.....................................	14
Drunk.........	2
Insane..	1
Assault..............................	1
Total..	95

EXHIBIT "I."

NUMBER OF ACCIDENTS AT THE PARK DURING THE TWO YEARS ENDING NOVEMBER 30, 1877.

MONTH.	Dec. 1, 1875 to Dec. 1, 1876.			Dec. 1, 1876 to Dec. 1, 1877.		
	Saddle Horses.	Vehicles.	Individuals.	Saddle Horses.	Vehicles.	Individuals.
December	1	1	2	....	3	1
January	....	1	....	....	....	....
February	1	2	....	2	8	6
March	....	1	1	....	....	....
April	....	2	2	....	1	2
May	....	....	1	....	....	....
June	....	....	....	....	1	....
July	....	2	1	....	1	....
August	1	3	3	....	....	....
September	....	3	....	....	3	1
October	....	....	....	....	3	....
November	....	....	....	1	3	1
Total	3	15	10	3	23	11

EXHIRIT "K."

NUMBER AND CLASSIFICATION OF ANIMALS IMPOUNDED IN PARK POUND DURING THE TWO YEARS ENDING NOVEMBER 30, 1877.

MONTH.	Dec. 1, 1875 to Dec. 1, 1876.				Dec. 1, 1876 to Dec. 1, 1877.			
	Horses and Mules.	Cattle..	Goats..	Total..	Horses and Mules.	Cattle..	Goats..	Total...
December	5	14	....	19	2	6	17	25
January	2	8	....	10	8	33	....	41
February	2	1	....	3	2	20	....	22
March	....	5	....	5	4	17	....	21
April	....	31	....	31	3	23	....	26
May	3	7	....	10	13	29	....	42
June	4	1	....	5	8	9	....	17
July	3	7	....	10	....	5	....	5
August	....	....	....	....	2	18	....	20
September	....	14	....	14	....	10	....	10
October	1	6	....	7	....	19	3	22
November	2	12	....	14	....	11	....	11
Total	22	106	....	128	42	200	20	262

EXHIBIT "L."

DONATIONS TO THE PARK FOR THE TWO YEARS ENDING NOVEMBER 30, 1877.

NAME.	DESCRIPTION.
Mrs. J. B. Hall, Stockton	1 package Seeds; 100 Roots, Fig Trees.
Mr. Wm. H. Boothe	1 bag Mesquite Beans.
Mr. J. G. Manning	1 package Mesquite Beans.
Com. Henry Glass, U. S. N.	51 valuable Plants from Sandwich Islands; 25 packages Seeds.
Supervisor Thos. Boyce	1 package Grass Seed from Ireland.
Mr. J. C. Flood	1 box Laurel and Geranium Cuttings.
Hon. Newton Booth	4 packages Lupin Seed from France.
Supervisor D. A. Macdonald	4 boxes Grass from Sandwich Islands; 1 package Beech Nuts.
Hon. Wm. Alvord	Reports of Department of Public Parks, New York City; Manual of the Corporation of New York City; 1 package Nephelium Litchi.
Hon. Chas. F. Conant, Assistant Secretary of Treasury, U. S.	Report of Operations of the U. S. Life Saving Service for year ending June 30, 1876.
Mr. Guido Mangenburg	2 sacks Dahlia Bulbs.
Mrs. Tod Robinson	1 barrel Dahlia Bulbs.
Mrs. Loring Pickering	1 lot Texas Grass Roots.
Mr. Warren R. Payne	1 package of Seeds of rare Plants from Europe.
Mr. J. T. Haviland	1 dozen Oregon Quail.
Mr. Michael Murray, 1144 Folsom street	½ dozen California Quail.

FIFTH

BIENNIAL REPORT

OF THE

SAN FRANCISCO

PARK COMMISSIONERS.

Nov. 79

1877-79.

1878-79

SAN FRANCISCO:
GEORGE SPAULDING, STEAM BOOK, CARD AND JOB PRINTER,
"Mining and Scientific Press" Office, 414 Clay Street.
1880.

FIFTH

BIENNIAL REPORT

OF THE

SAN FRANCISCO

PARK COMMISSIONERS.

1878

1877-79.

SAN FRANCISCO:
GEORGE SPAULDING, STEAM BOOK, CARD AND JOB PRINTER,
"Mining and Scientific Press" Office, 414 Clay Street.
1880.

BOARD OF PARK COMMISSIONERS.

LOUIS McLANE,
WILLIAM ALVORD,
OLIVER ELDRIDGE.

OFFICERS:

LOUIS McLANE	*President.*
T. B. MORTEE	*Secretary.*
W. B. PRICHARD	*General Superintendent.*

FIFTH BIENNIAL REPORT

OF THE

PARK COMMISSIONERS.

To the Legislature of the State of California:

The Park Commissioners herewith present their Fifth Biennial Report of the management of the grounds under their charge.

The accompanying exhibits show accurately the receipts and disbursements for the two years ending November 30th, 1879; also, present other matters of interest, as follows:

Exhibit "A"—Receipts and disbursements from Nov. 30th, 1877, to Nov. 30th, 1878.

Exhibit "B"—Receipts and disbursements from Nov. 30th, 1878, to Nov. 30th, 1879.

Exhibit "C"—Detailed statement of disbursements for the two years ending Nov. 30th, 1879.

Exhibit "D"—Statement of the number of visitors from Nov. 30th, 1877, to Nov. 30th, 1879.

Exhibit "E"—Number of accidents from Nov. 30th, 1877, to Nov. 30th, 1879.

Exhibit "F"—Number of arrests made from Nov. 30th, 1877, to Nov. 30th, 1879.

Exhibit "G"—Number of animals impounded from Nov. 30th, 1877, to Nov. 30th, 1879.

Exhibit "H"—Classification of weather from Nov. 30th, 1877, to Nov. 30th, 1879.

Exhibit "J"—Donations to the Park from Nov. 30th, 1877, to Nov. 30th, 1879.

The improvements for the two years consist of the construction of a section of "Southern Drive;" the driveway connecting with First Avenue, and the road across the "Great Highway," connecting the Park at the western entrance with the Point Lobos Road.

About 5,500 feet of walks were completed.

The total length of drives and bridle paths constructed to date is 48,682 feet; area, 2,056,630 feet.

Total length of walks constructed to date is 10,000 feet.

A cottage was built near the eastern boundary of the Park for the florist in charge of the conservatories.

A propagating house on the nursery grounds was finished.

A large area was graded and converted into lawns and sown with selected grasses.

There have been planted in the Park to date, trees and shrubs, as follows:

In the Avenue and Eastern District	70,766
In the Western or Sand District	85,202

Flowering plants to the number of 45,000 have been raised and set out in the Avenue and Eastern District.

For the present season, there are in the nursery 45,000 trees and shrubs and about 25,000 flowering plants.

The work of reclaiming the sand waste was prosecuted to a considerable extent, but insufficient funds at the disposal of the Commissioners prevented them from making very great progress in this direction.

The erection of the conservatories was the main improvement made since last report. The structure is favorably located on a commanding site between the "Main Drive" and the "North Ridge Road," is about 250 feet in length, oriental in style, graceful in outlines and highly ornamental.

The main entrance or "Reception Room" is 23 feet square, has a majolica fountain in the center, and is substantially furnished. It opens into the rotunda or "Palm House," a circular room, 56 feet in diameter and about the same number of feet in hight. An octagonal space in the center of the rotunda was prepared for, and is now filled with palms, cycas, ferns, pandanus and other varieties of rare and tropical plants. A terra cotta fountain of unique design—a group, "Out in the Rain"—is in constant play and relieves the dryness of the atmosphere.

On the right of the rotunda is the "Orchid House," an arched room 35 by 50 feet, not yet thoroughly stocked, still quite a display is made of some handsome varieties.

The arched room on the extreme right is set apart for the cultivation of the larger and rarer aquatic plants. A circular pond 28 feet in diameter is here constructed and furnished with the necessary heating apparatus. Some fine specimens of the Victoria Regia (the seeds were a gift from H. B. M. Consul, Wm. Lane Booker) have here been successfully grown and brought to maturity, producing circular leaves over seven feet in diameter, and about 25 flowers. The Queen Lily attracted thousands of visitors. Several nelumbiums and other curious and interesting members of the aquatic family are approaching maturity.

On the left of the main building is a wing similar in size and shape to the "Orchid House;" this is set apart for flowering and ornamental foliage plants.

The Green House adjoining, which corresponds in general features with the aquatic department, is intended for the growth of hard-wooded plants, such as japonicas, azaleas, &c.

In the rear of the building are two propagating pits 50 feet long and 12 feet wide, a growing house 75 by 25 feet, and a potting room 30 by 30 feet.

A heating apparatus beneath the potting room supplies the requisite warmth to all the chambers, and an admirable system of ventilation enables the keeper in charge to preserve at all times an equable temperature.

The conservatories cover an area of 15,000 feet. Thirty-five tons of glass and over three tons of putty were used in construction.

The construction of the conservatories was authorized by Act of the Legislature, and a special appropriation provided therefor at the session 1877–'78.

A portion of the framework and unground glass was presented to the Park by a number of gentlemen of this city.

The number of visitors is steadily on the increase, and when the Geary Street, Park and Ocean R. R. Cos. shall have completed their lines, the terminus being at the north side of the Park near First Avenue, these grounds will without doubt prove to be the most popular resort in this city.

A number of iron frame settees have been purchased and will be placed in suitable and sheltered places in the Park and along the avenue, for the convenience of visitors.

On the 3d day of October, 1878, the resignation of E. L. Sullivan, Esq., as a Park Commissioner was accepted by the Board, and on the 7th day of November, 1878, Capt. Oliver Eldridge was duly elected to fill the vacancy, and a commission was issued to him in accordance with law.

The Commissioners would suggest that the rate of taxation for the improvement and maintenance of the Parks and Avenue be fixed at five cents upon each one hundred dollars' valuation of taxable property in the City and County.

Respectfully submitted,

LOUIS McLANE,
WILLIAM ALVORD,
OLIVER ELDRIDGE,
Park Commissioners.

EXHIBIT "A."

RECEIPTS AND DISBURSEMENTS FROM NOVEMBER 30, 1877, TO NOVEMBER 30, 1878.

RECEIPTS.		DISBURSEMENTS.	
Balance on hand, Nov. 30, 1877	$1,346 73	Improvements and maintenance	$65,530 78
From taxes	36,025 20	Salaries	3,400 00
From special appropriation	40,000 00	Office Rent	386 67
From sale of old sacks	178 00	Office Expenses	89 30
From pound fees	101 00	Stationery	52 35
From police fines	95 00	Printing	74 35
		General Expenses	164 20
		Balance on hand	8,048 28
	$77,745 93		$77,745 93

77,745.93
1 346.73
76,399.20

77,745.93
8,048.28
69,697.65

EXHIBIT "B."

RECEIPTS AND DISBURSEMENTS FROM NOVEMBER 30, 1878, TO NOVEMBER 30. 1879.

RECEIPTS.		DISBURSEMENTS.	
Balance on hand Nov. 30, 1878	$8,048 28	Improvements and maintenance	$59,095 82
From taxes	46,048 98	Salaries	3,600 00
From sale of disabled horses	75 25	Office rent	420 00
From sale of extra pipe	125 20	Office expenses	74 00
From pound fees	40 00	Stationery	53 61
From police fines	620 00	General expenses	288 00
Transferred from "General Fund"	2,000 00		
Balance drawn against appropriation 1879-80	6,573 72		
	$63,531 43		$63,531 43

63 531 43
8 048.28
55,483.15

6

69,048.28 Total Exp.
30,770.00 Constructio
8 28

EXHIBIT "C."

DETAILED STATEMENT OF DISBURSEMENTS FROM NOVEMBER 30, 1877, TO NOVEMBER 30, 1879.

Construction of drives, labor	$7,301 55
Construction of walks, labor	368 35
Repairs and maintenance of drives, labor	10,247 97
Repairs and maintenance of walks, labor	96 76
Repairs and maintenance of bridle path, labor	204 50
Repairs and maintenance of Point Lobos Road, labor	169 90
Surveying, labor	382 55
Grading and preparation of grounds, foremen and general work, labor	5,448 95
Drainage, surface and sub, labor	1,051 80
Repairs and maintenance of water distribution and water pipe extension, labor and material	280 00
Repairs and maintenance of water distribution and water pipe extension, labor	1,052 75
Repairs—watering apparatus, labor and material	250 80
Repairs and maintenance of buildings, gates and fences, labor	2,118 40
Repairs—gates and fences, Buena Vista Park, labor	23 75
Repairs—rolling stock, labor	253 85
Repairs—rolling stock, labor and material	551 65
Repairs—tools and implements, labor	49 10
Repairs—tools and implements, blacksmithing and sharpening, labor and material	239 60
Repairs—harness, labor	14 35
Repairs—harness, labor and material	39 00
Repairs—surveying implements, labor and material	58 00
Shoeing horses, labor and material	1,079 75
Millwork, labor and material	189 26
Stable attendance, labor	2,183 67
Sand reclamation, labor	671 48
Hauling soil, labor	1,506 78
Hauling manure, labor	1,753 20
Hauling, miscellaneous, labor	247 91
Miscellaneous small work, labor	530 87
Shop	11 55
Cutting and hauling wood	183 70
Clerical work	577 00
Construction of aviary	34 50
Construction of cottage	946 21
Construction of propagating house	119 35
Guards (guards, police-laborers, etc	12,977 70
Conservatory attendance	1,495 50
Compost (preparation of)	778 05
Planting trees	1,750 82
Maintenance of tree plantation	11,115 15
Maintenance of grass	4,534 20
Maintenance of flowers	1,432 55
Nursery attendance	4,659 45
Stable stock	147 30
Rolling stock	925 00

Miscellaneous stock	$401 15	
Nursery stock	611 75	
General tools and implements	512 07	
Reaping, cultivating and garden implements	154 68	
Surveying implements	1 00	
Police implements	8 00	
Plumbers' tools	6 00	
Account books	15 50	
Hay and grain	3,956 80	
Supplies (coal oil, soap, axle grease, &c.)	266 14	
Paints, oils and glass	139 87	
Powder and fuse	565 29	
Lumber	1,030 58	
Hardware	85 08	
Bricks	84 00	
Lime and cement	70 75	
Drain pipe	568 84	
Water pipe and fittings	3,114 57	
Watering apparatus	1,033 46	
Miscellaneous items and material	442 71	
Flowering plants and shrubs	356 75	
Coke and coal	227 18	
Construction of conservatories (grading site, making terrace, fitting up interior, furnaces, heating apparatus, ventilating apparatus, etc	30,770 55	
Seeds	149 35	
Salaries (see Exhibits "A" and "B")	7,000 00	
Office rent (see Exhibits "A" and "B")	806 67	
Stationery (see Exhibits "A" and "B")	105 96	
Office expense (see Exhibits "A" and "B")	163 30	
Printing (see Exhibits "A" and "B")	74 35	
General expense (see Exhibits "A" and "B")	452 20	
Total amount of disbursements for the two years ending November 30, 1879		$133,229 08

133,229.00
Conservatory — 30,770.55 Con
102,458.45
Policing — 12,977.70
2) 89,480.75
$ 44 720.37 per yea

EXHIBIT "D."

NUMBER OF VISITORS TO THE PARK FROM NOV. 30, 1877, TO NOV. 30, 1878.

MONTH.	Carriages	Double Buggies	Single Buggies	Equestrians	Pedestrians	Total Vehicles	Total People
1877—December	2,397	2.167	12,308	2,896	1,326	16,872	54,838
1878—January	1,889	1.939	9,797	2,258	1.011	13,625	44,144
February	2,042	2,010	9,825	2,308	1,066	13,877	45,005
March	3,097	2,674	13.075	3,218	1,258	18,846	61.014
April	2,732	2,460	12,352	3,139	1,251	17,544	57,022
May	2,535	2,645	12,093	3,137	1,523	17,273	56,479
June	2,108	2,312	10,992	2,770	1,473	15,412	50,479
July	2,458	2,392	11,717	3.094	1,659	16,567	54,454
August	2,959	2,991	12,860	3,332	1,722	18,810	61,484
September	3,037	2,865	12,548	3,268	1,549	18,450	60.167
October	3,671	3,560	15,683	4,236	1,617	22,914	74,595
November	3,309	3,116	14,314	3,654	1,808	20,739	67,679
Total	32,234	31,131	147,564	37,310	17 263	210,929	687,360

NUMBER OF VISITORS TO THE PARK FROM NOV. 30, 1878, TO NOV. 30, 1879.

MONTH.	Carriages	Double Buggies	Single Buggies	Equestrians	Pedestrians	Total Vehicles	Total People
1878 -December	2,470	2,917	12,393	3,107	1,410	17,780	57,857
1879—January	2,227	2,935	11,549	2,963	2,461	16,711	55,557
February	2,354	2,581	9,868	2,582	1,337	14,803	48,328
March	2,533	3,151	11,807	3,065	1,486	17,491	57,024
April	2,489	2,988	10,925	2,903	1,344	16,402	53,453
May	2,621	3,088	10,802	3,066	1,799	16,511	54,398
June	2,894	3,089	11,751	3,013	2,344	17,734	58,559
July	2,977	3,161	12,858	2,873	2,831	18,996	62,692
August	3,779	3,428	14,448	3,366	15,484	21,655	83,815
September	3,579	3,602	14,098	2,901	28,697	21,279	95,435
October	3,683	3.486	13,972	2,746	15,151	21,141	81,320
November	3,313	3,347	12,835	2,827	15,532	19,495	76,844
Total	34,919	37,773	147,306	35,412	89,876	219,998	785,282

EXHIBIT "E."

NUMBER OF ACCIDENTS AT THE PARK DURING THE TWO YEARS ENDING NOVEMBER 30, 1879.

MONTH.	Nov. 30, 1877 to Nov. 30, 1878.			Nov. 30, 1878 to Nov. 30, 1879.		
	Saddle Horses.	Vehicles.	Individuals.	Saddle Horses.	Vehicles.	Individuals.
December	....	....	....	....	....	....
January	....	....	....	....	....	....
February	....	1	....	....	....	....
March	2	9	5	....	....	....
April	....	3	1	....	....	1
May	....	2	1	....	2	....
June	....	....	....	....	2	....
July	....	2	....	....	....	....
August	....	....	....	....	2	....
September	....	2	....	....	3	....
October	....	7	....	....	2	....
November	....	4	2	....	2	....
Total	2	30	9	....	13	1

EXHIBIT "F."

ARRESTS MADE FOR VIOLATION OF PARK ORDINANCES FROM NOVEMBER 30 1877, TO NOVEMBER 30, 1879.

MONTH.	NUMBER.	NUMBER.
December	1877— 2	1878—11
January	1878— 0	1879— 3
February	1	4
March	3	3
April	1	4
May	1	4
June	2	2
July	2	4
August	6	4
September	7	5
October	8	2
November	4	2
Total	37	48

CAUSES OF ARRESTS.	NUMBER.
Fast driving or riding	62
Discharging firearms or hunting	8
Other offenses	15
Total	85

EXHIBIT "G."

NUMBER AND CLASSIFICATION OF ANIMALS IMPOUNDED IN PARK POUND DURING THE TWO YEARS ENDING NOVEMBER 30, 1879.

MONTH.	Nov. 30, 1877 to Nov. 30, 1878.				Nov. 30, 1878 to Nov. 30, 1879.			
	Horses and Mules.	Cattle..	Goats ..	Total...	Horses and Mules.	Cattle..	Goats ..	Total ..
December	2	....	....	2	2	2	....	4
January	6	5	....	11	3	30	....	33
February	7	1	....	8	....	....	....	....
March	2	11	....	13	3	5	....	8
April	4	5	....	9	4	....	....	4
May	1	3	....	4	9	30	....	39
June	....	1	....	1	....	1	....	1
July	2	8	....	10	3	3	..	6
August	....	5	3	8	....	....	....	....
September	4	16	....	20	....	56	....	56
October	....	....	....	....	....	....	....	....
November	7	9	....	16	....	....	....	....
Total	35	64	3	102	24	127	....	151

EXHIBIT "H."

CLASSIFICATION OF WEATHER AT THE PARK FROM NOVEMBER 30, 1877, TO NOVEMBER 30, 1879.

MONTH.	Nov. 30, 1877, to Nov. 30, 1878.				Nov. 30, 1878, to Nov. 30, 1879.			
	Days Fine and Pleasant	Days Cloudy, Light Winds prevailing....	Days Showery, Foggy, Cold, or very Windy	Days Rainy	Days Fine and Pleasant.....	Days Cloudy, Light Winds prevailing ...	Days Showery, Foggy, Cold, or very Windy	Days Rainy ....
December	13	11	7	....	11	4	15	1
January	7	10	7	7	12	2	13	4
February	7	6	7	8	15	1	11	1
March	10	17	....	4	9	10	8	4
April	15	6	9	....	13	7	10	....
May	13	8	10	....	19	4	8	....
June	11	9	10	....	23	1	6	....
July	12	3	16	....	6	....	25	....
August	10	2	19	....	10	....	21	....
September	22	4	4	....	12	5	13	....
October	21	2	7	1	20	6	5	....
November	22	6	1	1	19	3	4	4
Total	163	84	97	21	169	43	139	14

EXHIBIT "J."

DONATIONS FROM NOVEMBER 30, 1877, TO NOVEMBER 30, 1879.

Name.	Description.
Messrs.	A portion of the framework and unground glass of the Conservatories.
A. J. Pope	
Wm. Alvord.	
Wm. F. Whittier	
Jas. Irvine	
Chas. Main	
W. P. Fuller	
J. G. Kittle	
M. P. Jones	
J. M. McDonald	
Adam Grant	
Wm. F. Babcock	
R. N. Graves	
Samuel Crim	
Isaac E. Davis	
Chas. Lux	
Geo. C. Hickox	
Milton S. Latham	
W. W. Montague	
A. P. Hotaling	
Robt. C. Johnson	
Chas. Crocker	
A. L. Tubbs	
J. G. Eastland	
S. L. Jones	
C. Spreckles	
Leland Stanford and	
D. A. Macdonald	
Mr. J. C. Merrill	1 box Grass Roots from Sandwich Islands.
Mr. J. O. Eldridge	1 large Tank for Aquarium.
	1 Terra Cotta Vase.
Mr. A. K. P. Harmon	6 Catalogues of Plants and Trees.
	1 Fern, cibotium.
	1 Banana.
	1 Alocasia, macrorhiza variegata.
	1 Cissus, discolor.
	1 Geranium, Mrs. Pollock.
	1 Geranium, Happy Thought.
	3 Gardenia, radicans.
	1 Goodyera, discolor.
	6 Pereskia, aurantiaca.
	12 Caladium, of sorts.
	1 Bougainvillea Speciosa.
	1 Bougainvillea Glabra.
	1 Palm, areca rubra.
	1 Palm, Sapida.
	1 Palm, Fosteriana.
	1 Crinum Album.
	1 Maranta Zebrina.
	1 Passiflora princeps.
	6 Araucaria, sorts.
	6 Dracæna, sorts.
	1 Clerodendron Balfourii.
	1 Hibiscus, Rosa, sinensis.
	2 Stephanotis Floribunda.
	1 Torenia Asiatica.
	3 Lycopodiums, sorts.
	9 Begonias, sorts.
	1 Passiflora trifasciata.
	1 Fern, Adiantum Farleyense.
	1 Jasminum, Sambac.
	2 Coleus, chameleon.

EXHIBIT "J"—CONTINUED.

NAME.	DESCRIPTION.
Mrs. Ide	1 Ironwood tree.
Hon. Wm. Alvord	1 package Amaranthus seed.
	6 volumes New York Park Reports.
	1 volume Loudon's Encyclopædia.
	1 pot Lilies-of-the-Valley.
Col. G. W. Grannis	4 sacks Dahlia bulbs.
Mrs. A. Birrell	29 choice varieties seeds from Australia.
J. Herzog & Co.	1 cartload ground cocoanut fiber.
The Misses Parrott	165 choice Rose plants, 42 varieties.
Mrs, John Torrence	50 plants, Phormium Tenax.
Mr. Wm. M. Edgar	1 package Beechnuts.
Mr. E. Myer, of Eureka Nursery	1720 plants of various kinds.
Mr. Louis McLane	1 Office Carpet.
	1 lot Calla Lilies.
	1 lot Calceolaria plants.
	1 lot Pansy seed.
Mr. E. W. Burr	1 Banana.
	1 Aspidistra, Elinore, variegata.
	1 Sweet Ginger.
	1 Araucaria, Bidwellii.
	5 Araucaria, sorts.
Mr. W. F. Babcock	1 Sweet Ginger.
	1 package seeds, Ficus Indica.
	1 package seeds, Ficus retusa.
	1 package seeds, Ficus chlorocarpa.
Mr. R. B. Woodward	2 Nymphæa alba.
Mr. D. O. Mills	17 Camellias, of sorts.
	3 Metrosideros, pinata.
	13 Azaleas, of sorts.
	6 Begonias, of sorts.
	2 Cycas, revoluta.
	4 Banana (large, growing).
	2 Seaforthia, elegans.
	2 Palms, of sorts.
	9 Caladum, esculentum.
	3 Fittonia, of sorts.
	1 Jasminum, Sambac, flore plens.
	2 Allamanda, Schottii.
	4 Marantha, Zebrina.
	2 Anthurium, magnificum.
	1 Anthurium, Scherzerianum.
	1 Fern, Lygodium, scandens.
	1 Clerodendrum, Balfourii.
	2 Peristrophe, variegata.
	1 Thrysacanthus rutilans.
	2 Abutilons, of sorts.
	5 Alternanthera, of sorts.
	1 Peperomia, maculosa.
	1 Pandanus, utilis.
	36 Campanula, of sorts.
	24 Sempervivum, montanum.
	36 Echevria, secunda.
	3 Ferns, Asplenium, viviparum.
	2 Ferns, Petris, serulata, cristata.
Mr. Geary, Los Angeles	4 Orange Trees, 4 feet.
	4 Lemon Trees, 6 feet.
Mr. John H. Redington	Lotus of the Nile (roots).
Mrs. J. R. Bolton	13 Mexican Palms.
	1 Night-blooming Cereus.
	2 Achimenes.
	2 Ferns, of sorts.
	1 Lycopodium.
	1 Aspidistra, Elinore, variegata.

EXHIBIT "J"—CONTINUED.

NAME.	DESCRIPTION.
Mrs. J. R. Bolton	1 Hoya, carnosa, alba.
	1 Cissus, Mexicana.
	8 Begonias, sorts.
	1 Bignonia, Mexicana.
	1 Palm, Rhapis acaulis.
Mr. Henry Schmiedell	1 lot Forest tree seeds from Europe.
Hon. Chas. R. Bishop, Honolulu, S.I.	Variegated Banana.
	Ginger Plants.
Mr. E. Bosqui	Plants and seeds, "Mescal."
Occidental and Oriental S. S. Co.	Charges remitted on invoice of Japan lilies from Yokohama.
Mrs. A. M. Parrott	Magnolia grandiflora seeds from Alabama.
Miss Grace A. Parrott	Locust seed from Gilroy.
Miss Parrott	2 packages Convolvulus seed.
Dr. Vandenburg	11 Plants, small, of sorts.
	17 varieties of rare seeds from Japan.
Mrs. M. E. Keeney	1 Bignona, Venusta.
	1 Terra Cotta Fountain, group, "Out in the Rain."
Mme. C. DeGuigne	1 package Poppy seeds, rare varieties.
Holbrow & Elmes	12 plants, Tradescantras.
Mrs. N. J. Brittan	2 Japanese plants.
Mrs. A. B. Forbes	1 box Chrysanthemums.
Mr. Louis B. Parrott	200 Orchids, from Central America.
Mr. C. E. Watkins	2 large views of Conservatories.
	2 small views of Conservatories.
	2 large photos of Victoria Regia.
Mr. Geo. Robinson.	4 photo views Public Gardens, Melbourne.
Mr. C. Mohr	1 Shell Fountain.
Dr. Cooley	1 Alligator Pear.
	1 Coleus (the Pasha).
Mr. Tiburcio Parrott	2 Araucaria, sorts.
	2 Banana, sorts.
	1 Wigandia.
	1 Palm, Arizona (large).
	1 Palm, Arizona (small).
	1 Magnolia grandiflora.
	1 Palm, Satania, Borbonica.
	20 packages seeds of various plants from Siam.
	4 seeds Cozco Corn, from Peru.
Mr. W. T. Garratt	1 Erythrina, cristi gali.
	1 tree, Honey Locust.
Capt. Dearborn	6 Palms, of sorts.
	12 Ferns, of sorts.
	8 Crotons, of sorts.
Wm. Lane Booker, H. B. M. Consul	Victoria Regia seeds.
	4 Furze, in pots, from England.
	5 packages Tree and Shrub seed.
	2 packages Erica.
Dr. Joseph Hain	1 Date Palm.
	5 Date Palm Seeds.
	1 rare vine.
	1 Begonia Verschaffeltii.
	1 Passiflora, seedling.
	1 Cactus.
Mrs. Donald McLennan	4 white Water Lilies.
	1 Libonia Floribunda.
Mrs. F. W. Van Sicklen	2 Peristeria elata (el spirito santo).
Mrs. Geo. C. Hickox	1 Epiphyllum truncatum.
	1 dozen Quail.
Mr. C. F. Crocker	1 Cereus giganteus, 12 feet.
	1 package. Cereus giganteus seeds.
	100 Gold Fish.
	1 lot Canaries and other birds.

EXHIBIT "J"—CONTINUED.

NAME.	DESCRIPTION.
Mr. C. F. Crocker	100 lbs. seed for birds.
Mrs. H. Barriohlet	1 Cycas, revoluta. 1 Palm, areca Sapida.
Mrs. Jerome Lincoln	1 Brassaia actinophylla.
Capt. Oliver Eldridge	10 Camellias, of sorts. 2 Orange, of sorts. 1 Azalea.
Dr. Deperris	Acacia fragrans, seeds. Acacia decurens, seeds.
Mr. Chas. S. Capp	6 Date Palm seedlings, rare.
Mrs. Lumph	6 Lilies, of sorts. 1 Camellia. 1 Fern.
Mrs. Dickson, Sandwich Islands	2 roots Scarlet Flowering Lotus.
Mr. H. B. Williams, Agent P. M. S. S. Co	Charges remitted on invoice of Ferns from Melbourne, Australia.

T. B. MORTEE,
Secretary.